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TROPICAL DISEASES BULLETIN

Vol. 2. 1913. No. 4.

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TROPICAL DISEASES
BUREAU.

General Editor:
THE DIRECTOR OF THE BUREAU.

COMMONWEALTH MYCOLOGICAL INSTITUTE
26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

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TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 2.] 1913. [No. 4.

DYSENTERY.

Amoebic Dysentery.

Conor (A.). **La Dysenterie Amibienne en Tunisie.**—*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 316-317.

The author after acknowledging that Nicolle and Cathoire showed that the bacillary dysentery in Tunis is due to *B. dysenteriae* Shiga points out that there is also present in that country a dysentery due to entamoebae, which in the author's opinion are more often *E. histolytica* than *E. tetragena.*

S. R. Douglas.

Chauffard. **La Dysenterie Amibienne chronique.**—*Presse Méd.* 1913. May 14. Vol. 21. No. 39. pp. 389-391.

The report of a clinical lecture on chronic amoebic dysentery given at the medical clinic of Saint Antoine.

The lecturer in describing the life history of the Entamoeba causing dysentery follows the description given by Schaudinn of *E. histolytica*; he still believes that the pathogenic amoebae can be cultivated on artificial media.

A long account is given of the morbid anatomy found at post-mortem examinations. The lecture concludes with the detailed account of a case of chronic dysentery treated by subcutaneous injections of emetine; this case has already been referred to in this *Bulletin*, Vol. I., p. 714.

S. R. D.

(30654—2.) Wt. P 835—98. 1800. 7/13. D & S.

Dessy (S.) & Marotta (R. A.). **Contribución al Tratamiento de la Enteritis Disentérica y del Absceso del Hígado (amibiano), con el Método de Rogers.** [Contribution to the Treatment of Amoebic Dysentery and Liver Abscess by Rogers's Method.] —*Semana Médica.* 1913. Apr. 3. Vol. 20. No. 14. pp. 797-799.

An account of the successful treatment of a case of amoebic dysentery by injections of emetine.

The patient, a male aged twenty-five years, had suffered for a year with symptoms of colitis of a dysenteric type, and had tried all kinds of treatment without relief. Tenderness and burning sensations were present over the whole course of the large intestine, and the motions were numerous up to twenty-three a day, liquid and containing large quantities of pink mucus. Microscopic examination of the stools showed numerous amoebae.

A first injection of two centigrammes of hydrochloride of emetine was given subcutaneously, and on the following day the patient declared that he had the first good night since the commencement of his illness. The local symptoms were less and the motions fewer. A second injection of the same amount was then given, and on the third day he declared that he felt quite well. There had been no motion since the previous day, and palpation over the colon caused no pain. The appetite began to return. A third injection of two centigrammes was given, and at six p.m. of the same day the first solid motion was passed. No amoebae could be detected in it, either alive or dead. A fourth injection of the same amount was given on the following day, by way of precaution, but the patient seemed to be definitely cured, the bowels thenceforth acting normally.

S. R. D.

Marchoux (E.). **Le Chlorhydrate d'Emétine dans la Dysenterie Amibienne.**—*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 313-316.

The author reports two cases treated with emetine hydrochloride given by subcutaneous injection in whom, although all symptoms of dysentery disappeared, amoebae or cysts could be demonstrated in the stools. From observations made in these cases the author concludes that the amoebae present in the intestine are not invariably exterminated and that in some of the cases treated with subcutaneous injections of emetine salts we may expect relapses.

S. R. D.

Dufour (Henri) & Thiers (J.). **Dysenterie Chronique Amibienne traitée par le Chlorhydrate d'Emétine. Présentation de Malade.** —*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris.* 1913. Apr. 24. 3 ser. Vol. 29. No. 13. pp. 827-829.

The report of a case of chronic dysentery contracted in Portuguese India treated by the subcutaneous injection of hydrochloride of emetine. Four to six centigrams were administered per diem. Recovery was rapid.

S. R. D.

LYONS (Randolph). **The Treatment of Amebic Dysentery with Subcutaneous Injections of Emetine Hydrochloride. Report of Six Cases.**—*Jl. Amer. Med. Assoc.* 1913. Apr. 19. Vol. 60. No. 16. pp. 1216-1220.

An account of six cases of dysentery treated with subcutaneous injections of emetine hydrochloride. There was one fatal case. The doses of emetine given were from one half to three quarters of a grain per diem. The average time before the stools became normal was nine days. The author concludes by saying that up to the present none of the cases has shown signs of relapse.

S. R. D.

i. DARLING (Samuel T.). **Budding and other Forms in Trophozoites of *Entamoeba tetragena* simulating the "Spore Cyst" Forms attributed to "*Entamoeba histolytica.*"**—*Arch. Internal Med.* 1913. May 15. Vol. 11. No. 5. pp. 495-506. With 3 plates.

ii. **The Identification of the Pathogenic Entamoeba of Panama.**—*Ann. Trop. Med. & Parasit.* 1913. June 10. Vol. 7. No. 2. pp. 321-329.

i. Several papers by Darling on the identity and life-cycle of the amoeba causing amoebic dysentery in Panama have been reviewed recently (see this *Bulletin*, Vol. I., pp. 180, 462, 720). In this paper (i) the results of further studies are set forth.

The author's conclusions are as follows:—

"I have seen in fresh preparations of *E. tetragena* from a fatal case of dysentery bizarre pseudopodia and buds with refractile bodies in the extremities, though I did not observe extrusion of buds or nuclei. If one had merely observed in fresh preparations alone from a case of dysentery in man, the changes corresponding to those seen in stained preparations, the impression received would no doubt have been very much like that described by Schaudinn and Craig as the spore cyst formation of *E. histolytica*; but from an examination of the far more richly infected material from the kitten 'which occurs after a lengthy period of lively increase,' the true nature of the budding forms is understood and the opinion is formed that these changes are analogous to such essentially pathological manifestations of cellular degeneration as karyolysis, karyorrhexis, pyknosis and dislocation and extrusion of nuclei; moreover, the budding process is analogous to changes seen in mononuclear metazoal cells; for example, in defunct plasma cells or lymphocytes in the blood-stream, lymph-nodes and other locations.

"The descriptions of the life-cycle of *E. histolytica* by Schaudinn and Craig, therefore, are in all likelihood those of a spurious species, having resulted from observations of pathological changes in senile races of *E. tetragena.*"

The figures illustrate clearly the phenomenon described.

ii. In the second paper the author describes (*a*) the methods of examination used by him (he recommends staining *intra vitam* with gentian violet), (*b*) the amoebae as they appear in fresh and in stained preparations and (*c*) feeding and inoculation experiments.

The occurrence of four-nucleated schizonts is definitely mentioned. The author remarks that "when tetragena cysts have been fed to half-grown cats there has resulted not the typical

entamoebic colitis, such as is usually described in the literature, but an enteritis, *and in this lesion in the ileum trophozoites have been found which, though arising from tetragena cysts, had the morphology not only of* E. tetragena *but of* E. histolytica *and* E. nipponica."

[The use by Darling of the remark that *E. histolytica* is a "spurious species" is unfortunate and very probably incorrect. Recent research strongly suggests that the life-cycle of *E. histolytica* described by SCHAUDINN is inaccurate as regards the peculiar exogenous cycle—probably degenerative and associated with minute spores—recorded by him. The correct reproductive cycle of *E. histolytica* seems rather to be the formation of four nucleate cysts, as discovered by VIERECK for *E. tetragena*. If *E. histolytica* and *E. tetragena* are identical, then the name *E. histolytica* must stand, but its life-cycle would be not that recorded by SCHAUDINN but that first described by VIERECK, and the species name *tetragena* must then drop. At present however, it would be presumptuous to dogmatise on such a difficult subject.]

H. B. Fantham.

CRAIG (Charles F.). **The Identity of** *Entamoeba histolytica* **and** *Entamoeba tetragena*. **A Preliminary Note.**—*Jl. Amer. Med. Assoc.* 1913. May 3. Vol. 60. No. 18. pp. 1353-1354.

Previously Craig considered *E. histolytica* and *E. tetragena* to be distinct, but now he holds that *E. tetragena* is identical with *E. histolytica*, and that the life-cycle of the latter, described by SCHAUDINN and confirmed by himself and others, is incorrect so far as reproduction by budding or spore-formation is concerned.

His present opinion is based on the study of preparations sent by Dr. W. M. JAMES from three cases of histolytica-infection occurring in Panama, and on the study of a case of histolytica-infection in an inmate of the Soldiers' Home at Washington who had contracted dysentery in the Philippine Islands. Regarding the examination of these preparations Craig writes: "In all these cases I have been able to observe every form of both *histolytica* and *tetragena*, so far as nuclear structure and reproduction goes, that has been described for either species, and as double infection in these cases can practically be ruled out, I am forced to conclude that there is only one species of entamoeba present and that all of the forms found belong to the life-cycle of *Entamoeba histolytica*." He now considers that the budding forms supposed to represent a stage in the reproduction of *E. histolytica* are degenerative in character, and that the normal method of reproduction of *E. histolytica* in the cystic stage is by the formation of cysts containing four daughter nuclei.

As *E. tetragena* is, so far as present evidence goes, identical with *E. histolytica*, the name "*tetragena*" as a specific name should be abandoned. Craig and JAMES have observed that the amoebae presenting the typical histolytica nucleus do not as a rule show cysts. Craig does not agree with DARLING that *E.*

histolytica is a "spurious" species, as "amending the description of a species does not warrant the use of a new specific name." [See remarks above.]

H. B. F.

ORNSTEIN (Otto). **Zur Ätiologie der Amöbenruhr.** [Etiology of Amoebic Dysentery.]—*Arch. f. Protistenkunde.* 1913. Mar. 22. Vol. 29. No. 1. pp. 78-83. With 10 text-figures.

The material used came from El Tor, in the Sinai Peninsula, which is sometimes a quarantine station for the pilgrims going to Mecca.

From examination of fresh material it was concluded that the causative agent of the amoebic dysentery at El Tor was *E. histolytica.* Small cyst forms, as described by SCHAUDINN, were seen. Few of the amoebae showed compact nuclei, but contained chromidia.

The author points out that amoebae which might be interpreted as division forms probably result from plasmogamy, that is, from the apposition of degenerating amoebae.

After examining stained preparations, the author concludes that budding is an expression of degeneration division, as observed at the beginning of cyst formation in *E. tetragena.* HARTMANN, describing degeneration forms of *E. tetragena* (such as occur at the beginning of cyst formation), pointed out that KOIDZUMI in describing *E. nipponica* was dealing with a degenerating *E. tetragena.*

Cysts were rarely observed.

The large number of degenerating amoebae seen is probably to be accounted for by the fact that the patients had been treated before the material for examination was collected, and possibly the treatment had affected the amoebae adversely.

H. B. F.

LIVER ABSCESS.

SAMBUC (Edouard). **Notes Cliniques sur les Abcès du Foie au Tonkin.**—*Ann. d'Hyg. et Méd. Coloniales.* 1913. Jan.-Feb.-Mar. Vol. 16. No. 1. pp. 48-103.

The author in a long paper analyses with considerable skill his experience of this disease in Tonkin, where he had worked for some ten years and had seen over 100 cases.

His paper is divided into the following parts:—

Part I. Etiology.—

Under this heading the most noteworthy points are:—

(*a*) The rarity of the disease amongst the Annamites; for instance, in the hospital at Haiphong 111 cases were treated in thirteen and a quarter years, of whom 103 were Europeans. Again in the town of Hanoi in the year 1910 out of a total of 75 deaths amongst 12,534 Europeans twelve were certified as due to liver abscess, while of the 1,776 deaths occurring in over 62,000 natives only three were from this disease.

(*b*) Liver abscess was nearly always consecutive to dysentery and a definite history of this disease could be obtained in 64 per cent. of the cases; further, from the study of fatal cases the author concludes that the so-called chronic diarrhoea of Tonkin is in reality masked dysentery and, taking this into account, the percentage should be placed at a much higher figure.

(*c*) Alcoholism and opium smoking the author believes to be important factors in diminishing the resistance of the organism and thus rendering the individual more liable to the disease.

Part 2. Notes on the pathological anatomy.—

Number of abscesses.

In 56 cases there was	... ...	1 abscess.
,, 11 ,, ,, ,,	... ...	2 abscesses.
,, 10 ,, ,, ,,	... ...	3 ,,
,, 2 ,, ,, ,,	... ...	4 ,,
,, 1 ,, ,, ,,	... ...	5 ,,
,, 1 ,, ,, ,,	... ...	8 ,,
,, 6 ,, ,, ,,	more than	8 ,,
,, 2 ,, ,, ,,	at least	3 ,,

or in 89 cases in 56 (=63 per cent.) there was a single abscess and in 33 (=37 per cent.) there was more than one.

Situation of the abscess.—

	Per cent.
Right lobe	77·5
Left lobe	19·38
Spigel's lobe	2·32
Quadrate lobe	·80

Volume of abscess.—

Several litres	7
About 1 litre	23
More than 500 grams	27
About the size of an orange	28
Miliary	6

Part 3. Diagnosis of liver abscess.—

The author very strongly argues in favour of exploratory puncture, in which as he states he is supported by all practitioners of wide experience.

Part 4. Treatment.—

Early opening by means of an extensive resection of a rib if situated as is usual under the cover of the ribs.

The following complications are dealt with:—

Haemorrhage, generally easily controlled by packing.

Escape of bile occurring a few days after the operation is in the author's opinion not of serious import.

Pneumothorax due to opening a nonadherent pleura is not as a rule attended with serious symptoms.

Parotitis.—Two cases are described but unfortunately examination of the pus in one of these, which went on to suppuration, was not made, so that it is not known whether this was due to the amoebae.

Post-operation pleurisy, of a very insidious type.
Subphrenic abscess with usual symptoms.

Part 5. Prognosis.—

The mortality from liver abscess in Tonkin is 50 per cent. and this high figure is accounted for by the acute type of the disease frequently seen, and by the cachectic condition of many of the patients.

S. R. D.

GAIDE. **Le Diagnostic Différentiel des Kystes Hydatiques et des Abcès du Foie (Considérations cliniques).**—*Ann. d'Hyg. et Méd. Coloniales.* 1913. Jan.-Feb.-Mar. Vol. 16. No. 1. pp. 5-17.

This paper consists of a detailed account of a case of suppurating hydatid cyst of the liver which up to the time of the operation, performed for the evacuation of the pus, was considered to be an abscess of the liver consecutive to dysentery contracted in Madagascar. The case ended fatally. The author ends his paper with a long discussion on the differential diagnosis between amoebic abscess of the liver and hydatic cysts.

S. R. D.

GREY (George M.). **Liver-Abscess.** — *Jl. London School Trop. Med.* 1913. Apr. Vol. 2. Part 2. pp. 141-143.

The report of a case of liver abscess of the very acute type.

On the second attempt exploration by aspiration revealed pus and a Cantlie's trocar and canula were inserted with a view to drainage. The patient, however, died the same night. Post-mortem examination showed that there was a large abscess cavity with ragged walls; no sign of dysentery could be discovered.

Commenting on this case the author points out the unreliability of aspiration and advises laporotomy in its place; he also deprecates the use of Cantlie's tubes except under exceptional circumstances.

S. R. D.

ROUGET. **Abcès Amibien du Foie traité par la Ponction évacuatrice et les Injections sous-cutanées d'Emetine. Guérison.**—*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris.* 1913. Apr. 24. 3 ser. Vol. 29. No. 13. pp. 809-812.

The report of a case of liver abscess occurring in a patient who had suffered from dysentery fourteen years previously when resident in Saigon, during which period he had had several attacks of hepatitis.

The abscess was treated by aspiration and subcutaneous injections of emetine hydrochloride were given in doses of four to six centigrams per diem; the number of injections was six and the total emetine salt administered was 0·28 grams. Recovery was uninterrupted.

S. R. D.

MALLANNAH (S.). **The Value of Emetine in Liver Abscess.** [Memoranda.]—*Brit. Med. Jl.* 1913. June 7. pp. 1206-1207.

The report of a case of liver abscess which had, owing to the patient refusing operation, been treated by repeated aspirations; the pus however quickly recollected and the patient's general condition was rapidly becoming worse. At this stage treatment with emetine was commenced, one quarter of a grain dissolved in distilled water being given three times a day by the mouth. No further aspirations were employed. In spite of this the fever subsided in a week, the liver which was much enlarged subsided to its normal size in one month, and the patient steadily improved.

Twenty-one grains of emetine were administered.

S. R. D.

SEWELL (E. P.). **A Case of Amoebic Abscess of the Liver which had burst into the Lung, cured by Emetine Hydrochloride.**—*Jl. R. Army Med. Corps.* 1913. June. Vol. 20. No. 6. pp. 700-702. With 1 chart.

An account of a case of a somewhat chronic liver abscess which had burst into the lung. The patient in spite of surgical interference on two occasions was rapidly becoming worse. Ipecacuanha given in doses of twenty grains a day had no beneficial effect. Emetine hydrochloride was then given (two-third grains subcutaneously daily) and immediately improvement commenced and the patient recovered.

The author also mentions that he has treated cases of chronic amoebic dysentery with emetine salts with uniformly good results.

S. R. D.

MÜLLER (O.). **Die Diagnose und Behandlung des dysenterischen Leberabszesses.** [The Diagnosis and Treatment of Dysenteric Liver-abscess.]—*Arch. f. Schiffs- u. Trop.-Hyg.* Vol. 17. 1913. May. No. 9. pp. 289-303; and No. 10. pp. 335-351. With 2 plates and 3 text-figs.

The author gives his experience of liver abscess, consequent upon dysentery, of which he has seen twenty-eight cases in the course of twelve years' residence in Hong Kong. In opposition to the usual belief, he does not find that indulgence in alcohol, in hot climates, predisposes in any great measure to this disease. Only one of his patients could be called a heavy drinker, while several from their position in life, such as missionaries, were practically total abstainers. Bad nourishment on a badly-cooked and scanty diet would seem to be a much more potent cause of the complaint, married men with comfortable homes being relatively exempt. Among the author's patients there was not a single woman, though European women in Hong-Kong are nearly as numerous as the men. Public prostitutes, though often heavy drinkers, for this reason seem to escape. Chinamen also seem immune. Though the author has a large practice among Chinese, he has met with only one case of liver-abscess amongst them. One of his patients was a Japanese, one a Eurasian and one a

Portuguese half-caste, the rest being Europeans, and for this reason the author thinks that there is some kind of racial and sexual proclivity to this complication of dysentery.

Liver abscess, when due to dysentery, is very likely to escape recognition by the European practitioner of medicine, when new to the tropics. In German text-books of medicine the treatment of the subject is undoubtedly insufficient; and the inexperienced medical man is likely to put the condition down to malaria, owing to the chronic fever and the debilitated state of the patient. The antecedent dysenteric symptoms may be very trifling in amount, and should therefore always be carefully looked for. When the abscess is deeply situated, diagnosis is undoubtedly difficult. The patient should be stripped and examined on his back, and all regions where pain is complained of should be carefully palpated, including the intercostal spaces. A tape-measure will often show a considerable difference in the girth of the two sides of the chest, and enlarged superficial veins are also a valuable diagnostic sign. The urine should invariably be tested for urobilin, preferably by means of Schlesinger's test (zinc acetate, ten per cent., in alcohol). If the procedure seems to be indicated, the liver should next be probed in all directions, under an anaesthetic, with an aspirator-needle beginning with the right lobe. The freedom of movement of the needle when the abscess is entered is very characteristic.

When the abscess is found the author prefers to evacuate it by an operation in which portions about two inches in length of the eighth and ninth ribs are removed, with the soft parts, so as to expose the pleura. This is then incised and a corresponding incision made into the diaphragm. The inner edge of the incision in the latter is then fixed, by a continuous suture, to the costal pleura so as to shut off the pleural sac, and the liver is then punctured in the track of the aspirator-needle with a large trocar and cannula having a diameter of one centimetre. The cannula is left in situ, and the abscess is thus drained without any attempt being made to scrape its walls, which may cause haemorrhage. After five days the cannula is replaced by a rubber drainage-tube. This procedure is modified as circumstances require. Convalescence should occupy from three to four weeks, and if improvement does not at once set in, the presence of a second abscess should always be suspected. Of twenty-four cases thus submitted to operation six, or twenty-five per cent., succumbed from various complications. The author terminates his paper with a summary of the clinical history of each case.

S. R. D.

LECOMTE. **Carie Costale consécutive aux Abcès du Foie.**—*Ann. d'Hyg. et Méd. Coloniales.* 1913. Jan.-Feb.-Mar. Vol. 16. No. 1. pp. 17-48.

The author reports six cases of necrosis of the ribs consecutive to operations performed for the opening of liver abscesses. The necrosis in all these cases was extensive and required in many cases repeated surgical interference.

The author's conclusions are as follows:—

1. This complication of tropical liver abscess is not very uncommon.

2. It is more frequent in those cases where the abscess has been opened without resecting a rib than in those where an extensive resection has been carried out.

3. It is caused by insufficient drainage, due to too small an opening being made.

4. The necrosis affects usually the anterior part of the ribs and their cartilages and spreads by means of the mammary lymphatics.

5. The complication is difficult to cure and subject to relapses.

6. The best means of prevention is good drainage by means of a large opening both through the superficial structures and the liver and an extensive resection of a rib.

S. R. D.

Bacillary Dysentery.

Krontowski (A.). **Zur Frage über die Typhus- und Dysenterieverbreitung durch Fliegen.** [The Dissemination of Enteric and Dysentery by Flies.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Apr. 23. Vol. 68. No. 7. pp. 586-590.

According to Cao, the larvae of flies, if infected with bacteria, will retain them alive sufficiently long for the infection to be propagated by the winged insect. Galli-Valerio regards this question as an important one in regard to the recrudescence of epidemics. Experiments were undertaken to test this view.

Larvae of several species of fly, *Musca domestica, Lucilia Caesar,* and *Sarcophaga carnaria* and *mortuorum,* were enclosed in glass vessels having a layer of earth at the bottom. They were then fed on chopped meat moistened with a broth-culture of *B. typhosus* or *B. dysenteriae* Shiga-Kruse. After the lapse of three days the larvae were transferred to fresh vessels containing earth. In a proportion of the experiments the larvae were washed for one minute in a solution of sublimate (1:1000) to destroy all bacilli adhering to the surface of their bodies. As the flies hatched out, sterile slips of paper were placed in the jars for them to defaecate upon. Cultures were also made from the intestinal canal upon solid media, and in addition flies were placed in contact with sterile milk. The result of all these experiments was quite negative, from which the author concludes that the Galli-Valerio hypothesis is not proved.

The question as to how long dysentery bacilli can remain alive in the bodies of adult flies was next investigated. From twenty to thirty house flies were placed in a glass jar containing bread moistened with a twenty-four hour broth-culture of B. Shiga-Kruse. The flies were then isolated in other vessels, and after the lapse of varying periods, cultures were made from them. The flies having been killed with ether-vapour, the wings and legs were cut off, and the bodies were sterilized with formalin-vapour for from ten to forty-five minutes before being opened, control experiments with other bacteria having shown that three minutes contact with formalin-vapour in this way suffices for the purpose of disinfection, while bacteria in the alimentary canal remain active after

forty-five minutes. The general results of cultures made in this way was that the dysentery-bacilli could be isolated for from two to three days after absorption at the outside; all cultivations made from the fourth day onwards gave no colonies of these organisms.

S. R. D.

HUTT. **Neue Beiträge zur Kenntnis der Pseudodysenterie und Paradysenterie, sowie der sogenannten Mutation.** [A Fresh Contribution to our Knowledge of Pseudo- and Paradysentery, and their so-called Mutation.]—*Zeitschr. f. Hyg. u. Infectionskr.* 1913. Apr. 25. Vol. 74. No. 1. pp. 108-137.

This is a long and rather inconclusive paper representing a great deal of laborious work which cannot be conveniently abstracted, as it is embodied in a number of elaborate tables. The author undertook to test systematically the permanence of about forty different strains of pseudo-dysentery bacilli collected from various sporadic outbreaks of dysentery in Germany. All the types examined differed conclusively from the SHIGA-KRUSE bacillus of dysentery; but the number of races into which they have been subdivided by KRUSE and his pupils, under the letters of the alphabet, seems excessive. The author's conclusion is that all these various strains are referable to one permanent type the *B. pseudo-dysenteriae* (KRUSE) which is clearly distinguishable from the bacillus of true dysentery, *B. dysenteriae* Shiga-Kruse, but the differentiation should not go further. Such types as Flexner, Strong, and Type-Y are not really maintainable, if the sugar-reactions are taken as a criterion. Agglutination-tests permit of a division into strains but out of KRUSE's forty varieties the author selects, on the strength of his own results, only four, namely, A.D.E. and H, as worthy of classification, of which E has the peculiarity of slowly acidifying lactose and curdling milk. Upon these four he bestows the appellation of principal strains (*Hauptrassen*) and to them he adds B.C. and F. as subsidiary strains (*Nebenrassen*). The latter will not originate epidemics, but can be isolated in many cases along with the others. The permanency of such races must still be regarded as doubtful, and it is possible that they sometimes appear as gas-forming coli-form types. A transition from the true *B. dysenteriae* to *pseudo-dysenteriae* could not be obtained in any of the author's experiments.

S. R. D.

MIXED DYSENTERY.

GAUDUCHEAU (A.). **Recherches sur les Dysentéries (5e Note). Etude de Quelques Actions Défensives contre les Germes Dysentériques.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Apr. Vol. 4. No. 4. pp. 167-177.

A very disjointed paper containing remarks on the following subjects:—

1. The action of various drugs on cultures of amoebae was investigated and the author found that emulsions of creasote (5

per 1,000) killed amoebae in two minutes. *La liqueur de Labarraque* (composition of which is not given), two to five per cent., killed the amoebae in ten minutes. Ipecacuanha (in what form not mentioned), 1 in 50, failed to show any deleterious effect. Bile obtained from monkeys killed and dissolved the amoebae immediately.

2. Criticising Cohendy's explanation of the improvement, sometimes seen in cases treated with enemata of sugar solutions, being due to hypotonicity of this solution towards the amoebae, he suggests that in reality the beneficial result may be due to the alteration of the intestinal bacterial flora.

3. Discussing the relationship of bacteria to cultures of amoebae the author suggests that at times the bacteria may nourish the amoeba by breaking down the nutrient media into a substance suitable for their assimilation.

4. Infection of animals with human pathogenic amoebae gave, in the author's experiments, very inconsistent results and from these he suggests that pathogenic amoebae may be specific for the species of animal infected.

5. With regard to the type of *B. dysenteriae* found in Tonkin the author states that it ferments maltose but not mannite and is therefore closely related to, but not identical with *B. dysenteriae* Shiga.

S. R. D.

Martini. **Ueber Ruhr im Deutschen Schutzgebiet Kiautschou und in Schantung. (Congress des Royal Institute of Public Health, Berlin, 1912. Original-Referate).** [On Dysentery in the German Protectorate of Kiao-Chau and in Shantung.]—Abstract in *Centralbl. f. Bakt.* 1. Abt. Ref. 1912. Oct. 11. Vol. 55. No. 4-5. pp. 109-110.

The dysentery prevailing in the Protectorate is ascribable to the following agents:

1. *Entamoeba histolytica* (Schaudinn).
2. *Entamoeba tetragena.*
3. Probably, to *Uronema caudatum,* a ciliate organism.
4. B. Shiga-Kruse.
5. B. Flexner.
6. B. Type Y.
7. B. Strong.
8. A number of widely differing bacilli all referable to the class of moderately toxic dysentery bacilli like Nos. 5, 6, and 7.
9. Possibly to nematode worms.
10. Probably to mechanical, thermal and other unspecified causes not referable to the presence of living organisms.

This multiplicity of causes, already pointed out by Ohno of Tokio in 1905-1906, indicates the need for further investigation.

S. R. D.

CANTLIE (J.). **Collosol Argentum: Its Use in Sprue and Post-Dysenteric Conditions.** — *Jl. Trop. Med. & Hyg.* 1913. Apr. 15. Vol. 16. No. 8. pp. 123-124.

The author gives as his opinion that the bactericidal action of silver has probably been the cause of the frequent use of this metal in domestic goods.

He then states that finding collosol preparations are highly bactericidal and have great power of arresting fermentation, he tried their effect in cases of sprue and post-dysenteric conditions. The first case treated was one of sprue with very abundant frothy stools; doses of one drachm of collosol argentum (Crookes) were given three times a day with the result that the character of the stools was markedly changed; they became of a greenish colour and the frothiness disappeared. After six doses the drug was withheld but the frothy stools did not recur.

His present method of treating such cases is to administer five to sixty minims of the drug in half an ounce of water every morning till the stools become green, together with a rigid meat diet.

S. R. D.

LI (T. S.). **Etiology, Symptomatology, Diagnosis and Differential Diagnosis of Dysentery.** — *China Med. Jl.* 1913. Jan. Vol. 27. No. 1. pp. 20-24.

This paper consists of a summary of the symptoms, &c. of dysentery culled from various text books.

No original work is mentioned nor are any original suggestions made.

S. R. D.

CILIATE DYSENTERY.

WALKER (Ernest Linwood). **Quantitative Determination of the Balantidicidal Activity of certain Drugs and Chemicals as a Basis for Treatment of Infections with *Balantidium coli*.**— *Philippine Jl. of Science*, Sect. B., Trop. Med. 1913. Feb. Vol. 8. No. 1. pp. 1-15.

The author in his preliminary remarks states that, in individuals infected with these parasites, it is only at times that the Balantidia can be demonstrated in stools and in consequence of this spontaneous disappearance it is very difficult to judge the efficacy of a given treatment by repeated examination of the faeces. He further states that sooner or later a patient, harbouring Balantidia in the intestine, will develop dysentery which is very apt to prove fatal.

Up to the present various drugs have been used in this disease, but practitioners have disagreed as to their efficacy. With a view to proving the efficiency of the drugs the author tested their power of killing the Balantidia in vitro. The varieties of Balantidia used in these experiments were *B. coli hominis* and *B. coli suis*. The conclusions arrived at were:—

1. Compounds of arsenic and antimony, the aniline dyes, ipecacuanha, emetine, and quinine possess little or no power of killing these protozoa.

2. The salts of the heavy metals, especially mercury and silver, have a very high balantidicidal power.

3. The organic compounds of silver, which are not precipitated by albumin or if precipitated form soluble compounds with an excess of albumin, possess also a high balantidicidal power and the author suggests that these substances would be the most suitable drugs to experiment with clinically owing to their slight toxicity and their power of penetrating the tissues.

Tables are given showing the dilutions in which the various drugs and chemicals tested killed the Balantidia.

S. R. D.

HELMINTHIASIS.

Schistosomiasis.

Miyagawa (Y.). **Beziehungen zwischen Schistosomiasis japonica und der Dermatitis, unter Berücksichtigung der Methode der Auffindung von Parasiteneiern in den Faeces, und Beiträge zur Kenntnis der *Schistosomum*-Infektion.** [The Relationship between Japanese Schistosomiasis and Dermatitis, with special reference to the Method of discovering Eggs of the Parasite in Faeces.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. May 23. Vol. 69. No. 3. pp. 132-142.—*Sei-i-Kwai Med. Jl.* 1912. Sept. 10. Vol. 31. No. 9. pp. 228-229. —*Jl. Tokyo Med. Assoc.* Vol. 26. No. 7.

In those regions in which schistosomiasis is common in Japan there is a peculiar form of dermatitis which has been attributed to cutaneous infection by the young schistosome. The author however discards the theory of a causal relation because (*a*) the dermatitis occurs in regions where there is no schistosomiasis; (*b*) the histological changes in the skin in the dermatitis are quite different from those seen in skin containing the young worms; no young worms are found in sections of skin showing typical dermatitis; (*c*) dermatitis is more frequent in those who have no eggs in their faeces than those who have; (*d*) the author and his assistant suffered from dermatitis in 1912 but up to the present no eggs have appeared in their faeces.

The search for the eggs was made by a modification of Telemann's method: a mixture of equal parts of 50 per cent. HCl and ether is added to the faeces and the whole centrifuged. The eggs are found in the residue and are not so much damaged as in Telemann's method. There is the further advantage that no danger of an explosion is incurred.

The author summarises a series of valuable facts relative to the infective agent of schistosomiasis as follows:—

The younger worms of the *S. japonicum* seem to exist more often in the bed of the brook than in the running water, but the mud does not, apparently, contain a perceptible quantity of the worms. The infection is not observed in swampy regions but seems to be localised in places where there is plenty of water. It is more numerous in brooks than in rice fields, but occurs frequently in freshly watered rice fields. Quinine hydrochlor has no prophylactic action as was formerly supposed. Thickly woven cotton cloth acts as a preventive of infection to a greater or less extent.

R. T. Leiper.

Miyakawa (Y.). **On the Nutrition of the Eggs of *Schistosomum japonicum* and the Changes which they undergo under the Actions of Various Physical and Chemical Agents.**—*Sei-i-Kwai Med. Jl.* 1913. Feb. 10. Vol. 32. No. 2. [Whole No. 372.] pp. 10-11.

Four types of eggs are distinguished in faeces, *viz.* fine granular, coarse granular, those with young and those with well-developed miracidia. The characteristics of the dead eggs vary and are

probably due to post-mortem changes at various stages in the development of the egg. The most suitable temperature for hatching of the eggs is between 25° C. and 30° C. as in the months of July and August. Eggs still alive are found after immersion for three and at times four weeks in April and May. In July and August they have been kept only up to nineteen days. In urine they do not survive much longer than one week. After three but not after four weeks' exposure at –7° C. eggs are capable of hatching when placed in water at ordinary temperature. Eggs put into ice die immediately. At 37° C. more eggs die than hatch. Direct sun rays are injurious to hatching and to development. Darkness has no inhibitory action. Lack of oxygen and a five per cent. solution of common salt bring development to a standstill. In urine the power of resistance of the eggs is much weakened and the simplest and safest method of destroying them is to mix the faeces with the urine.

R. T. L.

Peake (E. C.). **Additional Notes on the Egg of** *Schistosomum japonicum.—China Med. Jl.* 1912. Nov. Vol. 26. No. 6. pp. 350-352. With text-figs.

In a previous paper the author had given an illustrated and detailed description of the egg of *Schistosoma japonicum*. The purpose of the present note is to draw attention to the occasional occurrence in faeces of unfertilised ova of this parasite. These contain no miracidium but are filled with granular material. In size they resemble the ova of the ankylostome, being smaller than the fertilised egg. The shell shows a single sharp outline in contrast to the double contour of the fertilised egg. In both fertilised and unfertilised ova the little curved nipple or spine can usually be found towards one pole. The patient from whom the unusual ova were obtained was carried into the hospital *in extremis*. A differential blood-count showed 54 per cent. of polymorphonuclears, 46 per cent. of lymphocytes, no large mononuclears and, strange to say, not a single eosinophile. This absence of eosinophilia is explained as resulting from the breakdown of the patient's resistance to the verminous infection.

R. T. L.

Edgar (W. Harold). **Yangtzse Fever.**—*Statistical Report of Health of Navy for the Year* 1911. pp. 167-169. [1912. London: published by H.M. Stationery Office.]

For several years a peculiar endemic fever has been recognised in the Yangtzse valley, chiefly in the neighbourhood of Hankow. This was often associated with urticaria and was called urticarial fever, and has recently been observed in a considerable number of naval officers. Practically all persons infected have bathed in shallow water or waded in marshy ground near the river, the Europeans generally for the purpose of snipe shooting. Dogs are frequently infected. The prognosis is better in Europeans than in natives, as they are less likely to suffer from reinfection, but even in Europeans the course is often very protracted. [The

disease is held by some to result from cutaneous infection with *S. japonicum*, but MIYAKAWA (see above) maintains it to be clinically distinct.]

R. T. L.

CONOR (A.) & ARROUX. **La Bilharziose en Tunisie: le Foyer du Djerid.**—*Bull. Soc. Path. Exot.* 1913. Apr. Vol. 6. No. 4. pp. 259-261.

In Tunis bilharziasis seems to be endemic between the 33rd and the 34th degree of latitude. In previous communications Conor has given the results of his inquiries in Gafsa and Nefzoua. The authors now show that this affection is sporadic in Djerid. The Bled ed Djerid, "the country of Palms," is in the southern part of Tunis from Gafsa to the edge of the Sahara in the isthmus which separates the Chott Djerid from Chott Rharsa. The inhabitants are chiefly employed in the cultivation of the palms. In the Oases there are numerous springs some of them thermal, and these, especially in El Hamma, are much frequented for bathing by the inhabitants.

R. T. L.

KAY (James A.). **On the Development of the Bilharzia Embryo.**—*Transvaal Med. Jl.* 1913. Mar. Vol. 8. No. 8. pp. 199-205. With 2 plates.

Dr. Kay contributes to the Bilharzia problem some new and remarkable views based upon experiments conducted in Pretoria. He states that he has succeeded in keeping the embryos of *Schistosoma haematobium* alive for 22 days and has followed a series of developmental changes which result in the production of a large number of wormlike organisms.

The miracidium after escaping from the shell only lives a short time even in pure water, its mission being to discharge the germ cells or eggs which eventually develop into an embryo; this new embryo is a small ovoid body about $\frac{1}{750}$ inch in length. About ten weeks are required for the embryo to arrive at "the mature globular mass of vacuoles ripe for fissuration." This ends the "fifth stage" and the shedding of the vacuoles or breaking up of the embryo ends its direct life. Later there is a development of cells with the formation of two nuclei and one vacuole. The author is unable to trace further stages in his cultures but believes that the nuclei become the mature male and female Bilharzia. He has given a baboon water to drink containing embryos "in the first stage of development" and on the fiftieth day afterwards made a post-mortem examination. No worms or eggs were found in the bladder but in all of several slides of blood and serum "not examined until some days after" Bilharzia embryos were found. The author [wisely] invites other workers to repeat his experiments and is willing to supply cultivations of the embryos.

R. T. L.

ODHNER (T.). **Zum natürlichen System der digenen Trematoden, V. Die Phylogenie des *Bilharzia*-Typus.**—*Zoologischer Anzeiger.* 1912. Dec. 10. Vol. 41. No. 2. pp. 54-71. With 7 figs.

In this exceedingly valuable systematic paper ODHNER revises the family Bilharziidae (*Schistosomidae* auct.) which now includes the genera *Bilharziella* Looss 1899, *Gigantobilharzia* Odhner 1910, *Ornithobilharzia* (n.g.) Odhner 1912 and *Bilharzia* Cobb. 1859. The author traces the phyletic development of these unisexual blood worms from a hermaphroditic intestinal form resembling *Liolope*. The stages are represented graphically in series thus: —*Liolope*—*Hapalotrema*—*Bilharziella*—*Ornithobilharzia*—*Bilharzia*, and the thesis is supported by a large number of morphological details.

R. T. L.

DISTOMIASIS.

POUMEYRAC (M.). **Fièvre Bilieuse Hémoglobinurique déterminée par la Distomatose Hépatique.** — *Ann. d'Hyg. et Méd. Colon.* 1912. July-Aug.-Sept. Vol. 15. No. 3. pp. 612-613.

The clinical history is given of a patient, admitted to hospital as suffering from malaria, in whom there was a fairly intense and generalised jaundice and vomiting. For several days previous there had been fever in the evenings and a slight degree of jaundice had been noticeable for several weeks.

Quite a distinct haemoglobinuria was observed on the day after admission; on the following morning however the fever had disappeared, and the urine was more abundant and not so dark. In the afternoon the fever returned (at 2 p.m. it was 39·1° C.) and the patient complained of a sharp scapular pain in the right side.

In a similar case observed in the preceding year at Phuhang Thuong a vast number of flukes were found in the liver at the post-mortem examination and in this case too the liver was eventually found to be literally crammed with these parasites. The other organs were healthy save only for some slight congestion in the right kidney.

R. T. L.

THIBAULT. **Un Nouveau Cas d'Infestation par *Clonorchis sinensis* chez un Européen au Tonkin.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Jan. Vol. 4. No. 1. pp. 35-38.

The only known cases of infection of a European with the Asiatic liver fluke is that noted by Dr. AUDIAU in 1910 and ROUX and TARDIEU in 1912. This paper adds an additional record, likewise from Tonkin. The *Clonorchis sinensis* has been shown by SÉGUIN, MOUZELS, MATHIS and LÉGER to occur in 30 per cent. of the natives around Tonkin.

In the case of Drs. ROUX and TARDIEU (see this *Bulletin*, Vol. I., p. 430) as many as 15 to 20 eggs of *Clonorchis sinensis* were seen microscopically in each coverslip preparation of the faeces in association with sparse cysts of amoeba and trichocephalus ova. But for this microscopical determination the case

would probably have been overlooked as during the six weeks spent under observation in hospital no symptom of hepatic insufficiency was apparent.

In Thibault's case the number of ova seen in a microscopical preparation averaged four or five. There was no eosinophilia and no history of hepatic insufficiency.

In the discussion following upon the reading of this paper Le Roy des Barres mentioned a further case in his surgical practice and Duvigneau quoted two instances of infection of man in Tonkin with *Fasciola hepatica.*

R. T. L.

Taeniasis.

Bettencourt (A.). **Sur la Fréquence relative du** *Taenia solium* **et du** *Taenia saginata* **en Portugal.**—*Arquivos Inst. Bact. Camara Pestana.* 1913. Apr. Vol. 4. No. 1. pp. 1-5.

Of 65 tapeworms received from colleagues in Lisbon and from the provinces 41 were specimens of *Taenia solium* and 24 of *Taenia saginata,* giving for *T. solium* a proportion of 63 per cent., which is much higher than in any other country for which statistics have been compiled. *Bothriocephalus latus* would appear to be entirely absent from Portugal.

R. T. L.

Carini (A.) & Mastrangioli (F.). **L'***Hymenolepis nana* **nello Stato di S. Paulo (Brasile).**—*Giorn. d. R. Accad. di Med. di Torina.* 1912. Oct.-Nov. Vol. 75. No. 10-11. pp. 297-300.

Since 1908 the authors have observed the eggs of *H. nana* in eleven cases, of whom four were adults, the others boys from six to fifteen years of age. In one of these cases which showed a large number of ova in the stool the administration of a vermifuge resulted in the removal of about 200 worms. The following symptoms are attributed to this infection:—pallor of the skin and mucous membranes, abdominal pains, diarrhoea, and nervous excitability.

R. T. L.

Ankylostomiasis.

Malvoz (E.). **Dix Années de Lutte contre l'Ankylostomasie des Mineurs.**—*Bull. Acad. Royale de Méd. de Belgique.* 1913. Mar. 29. Ser. 4. Vol. 27. No. 3. pp. 264-278.

The ankylostomiasis, which was formerly a source of much invaliding amongst the workers in the mines around Liège, has in the course of ten years been brought under complete control. The campaign consisted essentially in the tracking of all worm carriers whether sick or not, and their subsequent treatment under efficient supervision. During the course of treatment instruction in the principles of personal prophylaxis was given to the patients. The stools of all new comers and periodically of the whole personnel of the mines were microscopically examined. The result has been that an average of 23 per cent. of worm

carriers in 1902 has dwindled to less than two per cent. in 1912. Further the carriers can now be determined only by microscopical examination. There are no more patients!

R. T. L.

i. Ferrell (Jno. A.). **Methods for the Eradication of Hookworm Disease.**—*Amer. Jl. Public Health.* 1913. May. Vol. 3. No. 5. pp. 492-493.

ii. Rockfeller Sanitary Commission. **Third Annual Report of the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease.**—130 pp. With 42 illustrations. 1912. Washington, D.C., U.S.A., Offices of the Commission.

iii. Stiles (Ch. Wardell). **Soil Pollution. The Chain Gang as a Possible Disseminator of Intestinal Parasites and Infections.**—*U.S. Public Health Rep.* 1913. May 23. Vol. 28. No. 21. pp. 985-986.

These three publications give an account, the first mainly popular, the latter two official, statistic and scientific, of the vast anti-Hookworm Campaign that is now being waged in the United States of America under the financial aegis of Mr. Rockefeller. It is believed that the eradication of hookworm disease is dependent upon the installation and uniform use of sanitary privies by all the people in infected areas and the successful treatment of every infected person. The wholesale adoption of these simple remedies depends in a civilised community upon the proper education of the people as to their practical effectiveness and this is most convincingly demonstrated by the curing of known sufferers of the disease.

Everything is done to induce the general populace to be examined and treated. [The methods remind one forcibly of those adopted in this country by politicians and by the financial organisers of religious and charitable causes.] There are State and County dispensaries for the free examination and treatment of the disease for all applicants. The active co-operation of the doctors, teachers, editors and the leading citizens is obtained by personal visit or letter. In addition the country is being flooded with newspaper announcements, posters and handbills giving information relative to the itinerary, the bringing in of specimens of faeces, etc. The crowd assembled on the first dispensary day witnesses the use of the microscope, the collection of intestinal parasites, an exhibit of photographs of cured and uncured persons, charts, literature, etc., and much interest is aroused from the beginning. Each successive week finds the crowds increasing in size bringing back again and again those infected until cures are made.

The results of treatment in many cases are marvellous. It is no uncommon thing to find that there is a gain in weight of a pound a day. "Patients brought in on stretchers have been restored to normal health in a few weeks at a cost of only a few cents. The witnessing by the people of the transformation from invalidism, blighted ambition, misery and poverty to health, happiness and productive activity does the teaching which excites them to action."

The total number of persons recorded in the annual report for 1912 as having been treated in eleven States is 238,755, bringing the total for the three years during which the Commission has been working to 393,556 at an average cost per person of $1·02.

During this period 432,464 microscopical examinations were made and inquiries conducted to determine the degree of infection in country school children and the degree of soil pollution at farmhouses, etc.

The report is illustrated by a large series of illustrations showing the effects of treatment and the methods adopted to popularise the campaign; and concludes with a valuable report by the Scientific Secretary Professor Stiles. Three points in this are especially worthy of note.

(*a*) Hookworm disease is one of the commonest causes of amenorrhea and irregularity, especially of the delayed type and is very frequently overlooked as the exciting cause.

(*b*) The standard routine of treatment is as follows:—

First Day 6 or 8 p.m. Epsom Salts.
Second Day 6 a.m. ½ of total dose of Thymol.
8 a.m. ½ ,, ,, ,,
No breakfast.
10 a.m. Epsom Salts.
Noon, light lunch.

Stiles is led to modify this routine thus:—

(*a*) First day 5 p.m. Epsom Salts followed by copious drinks of water.
6 p.m. light supper.
8 p.m. Epsom Salts, followed by copious drinks of water.

(*b*) Second day 6 a.m. ⅓ total dose of Thymol.
7 a.m. ⅓ ,, ,, ,,
8 a.m. ⅓ ,, ,, ,,

By the three-dose method the same number of grains is taken into the intestines in the same number of hours. Where the patient shows some idiosyncrasy to thymol or when symptoms of thymol poisoning develop, the three-dose method permits the idiosyncrasy or symptoms to be discovered more promptly and at a time when a smaller dose is in the system.

From a considerable amount of chemical work it is concluded that less than ten per cent. of the administered thymol is excreted unchanged in the faeces. Ninety per cent. of each dose of thymol must therefore either be decomposed or be absorbed from the intestinal tract, a proportion certainly not anticipated on the basis of clinical observations.

In "Soil Polution" Professor Stiles complains that, save in a few instances, the American authorities not only neglect to utilize the opportunities of inculcating lessons in cleanliness, hygiene, and sanitation amongst prisoners but actually permit and even compel their prisoners to live under conditions of filth ideal for the spread of soil pollution diseases.

R. T. L.

Cockin (R. P.). **Ankylostomiasis in Grenada.** — *Parasitology.* 1913. Apr. Vol. 6. No. 1. pp. 57-67.

The unusually large number of patients suffering from some degree of dilatation of the heart and the occurrence of an intermittent fever which did not respond to quinine or was explained by the finding of malarial parasites in the blood led Dr. Cockin to conduct a series of investigations into these maladies during his official residence in Grenada.

Of the sick populace sent to the Hospitals for treatment and varying in age from young children of three years to old men of 85, no less than 62·78 per cent. in a series of 1,400 were found to harbour eggs of ankylostomes. Of these only two per cent. actually came for treatment for ankylostomiasis and not more than 45 per cent. showed definite symptoms of this disease.

Examination of the urine showed the presence of albumin in fourteen per cent. of the cases infected with the parasite and this occurred quite as frequently in early as in late cases. The following figures are given to bear out the striking association noted between the occurrence of albuminuria, cardiac dilatation and ankylostome infection.

—	Albuminuria.	Cardiac dilatation.	Albuminuria and cardiac dilatation.
Associated with ankylostomiasis.	52	70	37
Not associated with ankylostomiasis.	9	2	2

Thus the parasite was present in 92 per cent. of the cases, an association out of all proportion to the degree of incidence obtaining amongst the sick population generally. The author concludes that while arduous labour in a hilly country does affect the cardiac condition it does so by aggravating an already diseased organ.

From a series of 25 blood examinations, made in cases in which the disease was advanced, the haemoglobin was estimated at 20·5 per cent. and the differential leucocyte count showed an eosinophilia of 22·4 per cent.

A history of ground-itch was obtained in 93 per cent. of the cases.

The intermittent fever was inconstant and did not depend upon the severity of the infection: the expulsion of the parasites proved the only efficient febrifuge. Constipation was the rule but occasional cases of diarrhoea, associated with the passage of blood and mucus extending over a period of years, recovered after treatment which resulted in the expulsion of a large number of parasites. Dr. Cockin's experience is strongly in favour of Beta Naphthol as a rapid, complete, safe and cheap vermifuge. "Haemoglobinuria" occurred however in one per cent. of the cases treated by this drug. His suggestions as to the measures to be taken to free the Colony of the disease follow upon well-known lines.

R. T. L.

BROWN (B. W.). **Hookworm Disease in Southern China.**—*U.S. Public Health Rep.* 1913. Feb. 7. Vol. 28. No. 6. pp. 250-252.

The immigration authorities of the United States now require a rigid examination for ankylostome infection of all aliens arriving in the United States. The question of the distribution of this disease in the Orient has consequently assumed one of economic importance. The author has collected statistics from Dr. BELL in Hongkong who reports 7·5 per cent. of cases in 253 Chinese, 10·5 of 172 Hindus and 0 per cent. in 159 Europeans examined by him.

Dr. WHYTE at Swatow gives the degree of infection of his district as 74·5 per cent. of the farmers and 54 per cent. of the general population as a result of the examination of 257 cases. Drs. ERONE, AUBREY and Lindsay WOOD find in 556 persons leaving Hongkong from Southern China for the United States 65 per cent. of infections. The town and district of Sun Ning, not far from Hongkong, furnished 46 cases out of 102.

R. T. L.

SCHÜFFNER (W.) & VERVOORT (H.). **Das Oleum chenopodii gegen Ankylostomiasis und eine neue Methode der Wertbestimmung von Wurmmitteln.** [The Action of Oleum chenopodii in Ankylostomiasis and a New Method of evaluing Vermifuges.]—*München. Med. Wochenschr.* 1913. Jan. 21. Vol. 60. No. 3. pp. 129-131.

*Although it is rather expensive Oleum chenopodii is a highly efficient vermifuge in comparison with Thymol, Eucalyptus, and Naphthol, as shown by the results given in this paper.

The authors suggest that the action of these anthelmintics may be most satisfactorily apprised by comparing the proportion of worms removed in two successive courses of treatment with Thymol with the proportions obtained by substituting another drug alternately in the first and second courses.

They tabulate their cases as follows:—

No. of Patients.	1st treatment.			2nd treatment.		
	Vermifuge.	Ankylostomes.	Ascaris.	Vermifuge.	Ankylostomes.	Ascaris.
153	Thymol ...	3706	434	Thymol ...	765	127
165	Thymol ...	4808	162	Ol. Eucalypt....	774	8
354	Ol. Eucalypt....	4315	39	Thymol ...	7116	321
309	Thymol ...	8449	652	Naphthol ...	1147	15
188	Naphthol ...	3462	70	Thymol ...	1641	316
142	Thymol ...	4154	155	Ol. Chenopodii	751	45
146	Ol. Chenopodii	8022	244	Thymol ...	820	37

* An account of this paper, on different lines, was published in this *Bulletin*, Vol. 1, p. 700.

These figures give the following percentages for Ankylostomes removed:—

Activity of Thymol	:	Thymol	=	83 : 17
,, ,, ,,	:	Eucalyptus	=	86 : 17
,, ,, ,,	:	Naphthol	=	88 : 12
,, ,, ,,	:	Ol. Chenopodii	=	85 : 15
,, ,, Eucalyptus	:	Thymol	=	38 : 62
,, ,, Naphthol	:	Thymol	=	68 : 32
,, ,, Ol. Chenopodii	:	Thymol	=	91 : 9

R. T. L.

CALHOUN (F. P.). **Eye Complications caused by Hookworm Disease with Special Reference to the Formation of Cataracts.**—*Jl. Amer. Med. Assoc.* 1912. Sept. 21. Vol. 59. No. 12. Pt. 2. pp. 1075-1078.

The association of eye complications with hookworm disease has been known for many years. NIEDEN estimated that of 180 cases fully seven to eight per cent. had some retinal changes such as anaemia, arterial pulsation, serpentine veins, great pallor of the disks, and haemorrhages. All of these might occur in chlorosis or other anaemia; nevertheless, characteristic retinal haemorrhages more numerous and earlier in the periphery than near the papilla or macula and massed in groups of punctate form, are typically associated with hookworm disease. Other changes of a more general character are summarised from the literature by ASHFORD as follows:—blurred vision, dilated pupils, diplopia, unilateral and bilateral nystagmus, amaurosis, restriction in visual field, night blindness and other asthenopic symptoms which might occur in any protracted illness with anaemia.

Night blindness is variously estimated as occurring in from three to twenty-four per cent. The condition of the pupil is regarded by STILES as of diagnostic importance:—"If the patient is directed to stare intently into the observer's eyes the pupils dilate, then the patient's eyes assume a dull, blank, almost fishlike or cadaveric stare."

In the present paper special attention is directed to cataracts in the young and spontaneous haemorrhages from the conjunctiva associated with, if not caused by hookworm infection. Three cases are reported in detail showing the onset of cataract due to the anaemia and toxaemia produced by the hookworms. A remarkable case of spontaneous bleeding from dilated veins in the retrotarsal fold of the conjunctiva in a well-developed girl of eleven years of age is held to be associated with the presence of many ankylostomes in the intestine. The haemorrhages ceased after a course of anthelmintic treatment, an iron tonic and the local application of a weak epinephrin eye-wash. The eye changes are held by the author to be actually due to, not merely associated with, the hookworm infection. Retinal haemorrhages, enlarged veins, and optic neuritis strongly point to a toxaemia producing a degeneration in the fundus and acting upon the capsular epithelium with a consequent cloudiness of the lens.

R. T. L.

STITT (E. R.). **A Quick Method for accurately differentiating the Species of Hookworm of Man.**—*Jl. Amer. Med. Assoc.* 1912. Nov. 9. Vol. 59. No. 19. pp. 1706-1707.

The author believes that the most satisfactory method of demonstrating to students the difference between *Ankylostoma duodenale* and *Necator americanus* is by showing the characteristics of the buccal capsule of each species. This however is extremely difficult unless the worm is so orientated that a direct view may be had of the opening of the mouth, and this can be best be attained by placing the fresh worm under a coverglass in salt solution and causing it to roll by gentle manipulation of the glass with a toothpick. Next attention should be directed to the copulatory bursa of the male. In *N. americanus* a deep cleft separates the two branches of the dorsal ray and they have bipartite lips. In *A. duodenale* this cleft is shallow and the tips of the branches tridigitate. The dorsal ray is not the conspicuous structure usually represented in text books. Another point to which attention is drawn is in the termination of the spicules. In *A. duodenale* the spicules are simple and end as separate hair-like processes. In *Necator americanus* the two spicules are said to fuse at the terminal endings and to possess but a *single* barb like a fish hook.

Lactophenol solution has been found a satisfactory clearing reagent for ankylostomes and even such large worms as *Ascaris lumbricoides*; it can also be used with good result for small trematodes. There is only slight shrinking. The formula is:—

Lactic acid	1 part.
Phenol (cryst.)	1 part.
Glycerin	2 parts.
Water	1 part.

The specimen should be fixed previously in 2 per cent. solution of formalin for from two to twelve hours according to size, then transferred to equal parts of lactophenol solution and water and finally to full strength lactophenol. In this they may be kept indefinitely in a bottle or as permanent mounts on a glass slide if the coverglass is ringed with gold-size.

R. T. L.

SCHÜFFNER (W.). **Notiz über den Bau der Schwanzspitze bei Ankylostomum- und Nekator[*sic*]-weibchen.** [The Morphology of the Tail in Ankylostoma and Necator Females.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1912. Oct. Vol. 16. No. 20. pp. 700-703.

The author discusses the constancy and specific significance of a small spine obtruding from the posterior end of the female of *A. duodenale*. He notes its absence in *Necator americanus*. In the females of both species a pair of "canals" can be made out just anterior to the tip of the tail and apparently perforating the cuticle. In Deli (Sumatra) both species come under observation. The *Necator americanus* chiefly from Java, the *Ancylostoma duodenale* from the southern provinces of China.

[The "canals" appear from the illustrations to be minute lateral caudal papillae. It should be noted that in the photograph showing a series of the two different species of ankylostomes in man those exhibiting characteristics of Necator are labelled Ankylostomes and vice-versa.]

R. T. L.

LANE (Clayton). *Agchylostoma ceylanicum*, **a New Human Parasite.**—*Indian Med. Gaz.* 1913. June. Vol. 48. No. 6. pp. 217-218. With 1 plate.

A batch of thirty prisoners from Mymensing Jail were treated with MANSON's mixture for ankylostome infection and the worms were picked out from the faeces after washing and sedimentation. In three of the cases some of the worms were noticeably thinner and shorter than adult specimens of *A. duodenale.* These proved on microscopical examination to belong to the species *A. ceylanicum*, hitherto known only as an intestinal parasite of the civet cat in Ceylon. Its appearance in man is apparently merely sporadic but Lane shows that it commonly infests the cats and dogs in Berhampore, Bengal. An African lion born in the Calcutta Zoo was also found to be infected with this species.

Whereas the type specimens from the civet cat measure on an average 5 mm. in males and 7 mm. in females, in the ordinary cat these figures are 6·8 mm. and 7 mm., in the dog 7·2 mm. and 9·8 mm. and in man (passed after eucalyptus mixture) 8·5 mm. and 10·5 mm. The chief specific characters are given thus—"Two pairs of ventral marginal teeth; when the mouth is looked into from without the one pair is deep and cephalad, and the other superficial and caudad. The points of both pairs are directed caudad. The bursa of the male has marked clefts dividing the dorsal from the lateral lobes; the dorsal ray bifurcates, and each branch again bifurcates, while the edge of the dorsal lobe of the bursa has a single convex curve on each side of the mid-line the two curves producing an outline like that of a weak figure 3. The lateral lobe is rather long and rounded."

Lane points out that should this parasite be shown to be of any clinical significance in man the prophylaxis of ankylostomiasis in India becomes unexpectedly complicated.

R. T. L.

OTHER NEMATODE INFECTIONS.

LANE (Clayton). *Trichostrongylus colubriformis* **(Giles 1892), a Human Parasite.**—*Indian Med. Gaz.* 1913. Apr. Vol. 48. No. 4. pp. 129-132. With 14 figs.

An opportunity recently presented itself to the author to examine the original material of GILES. From a comparison with the recent descriptions of *Trichostrongylus instabilis* confirmation was obtained for the view that these two species are really identical. The only difference which Lane is unable to explain as due to error in the original description of *S. colubriformis* is the constantly larger size of the Indian specimens. A

visit to Sanawar enabled the author to determine that the sheep there were infected with this species and to obtain further material for investigation from the "type" locality. The differences in size are attributed "either to racial differences inherent in worms inhabitating hosts in different parts of the world or to difference in methods of preservation." A number of specimens of *Ancylostoma duodenale, Necator americanus* and *Oxyuris vermicularis* were afterwards measured and found to exceed on an average the mean given for these worms in other parts of the world. [A portion of the original material was sent to the British Museum by GILES in 1912 and independent confirmation of the above results was published in the Report of the Advisory Committee for the Tropical Diseases Research Fund for 1912.]

R. T. L.

BRAU (P.). **De l'*Anguillula intestinalis* en Cochinchine et de son Diagnostic hématologique.**—*Bull. Soc. Path. Exot.* 1913. Apr. Vol. 6. No. 4. pp. 262-264.

For some time past the author has remarked in his daily blood examinations at the Laboratory of the Military Hospital in Saïgon a certain degree of eosinophilia, up to 76·34 per cent. even, which was not explainable either by the existence of clinical symptoms or by the occurrence in the stools of the eggs of parasites or even amoebae.

In five recent cases in which the minimum eosinophilia observed was 25 per cent., the maximum 69 per cent., a repeated examination of the stools revealed the presence of *Strongyloides intestinalis,* and the author is of opinion that not only may this parasite have been the cause of this profound modification of the normal blood count but it may well give rise to more serious troubles than those hitherto imputed to it. Progressive anaemia and gastro-intestinal dyspepsia were noticeable in all these cases and in some a chronic diarrhoea of several years duration.

Energetic treatment with thymol resulted, if not in a total elimination of the parasites, at least in a very distinct amelioration of the various symptoms and a noteworthy arrest of the progressive emaciation.

R. T. L.

STILES (C. W.). [**Treatment of Strongyloides Infection.**]—*Science.* 1913. Jan. 31. (new ser.) Vol. 37. No. 944. p. 198.

A brief record is made in some notes on technique and treatment, published in a report of the proceedings of the Helminthological Society of Washington, to the effect that "judging from several cases in which it has been tried, the use of flowers of sulphur seems to be of promise in the treatment of infections with *Strongyloides stercoralis.*"

R. T. L.

RANSOM (B. H.). **The Life History of *Habronema muscae* (Carter), a Parasite of the Horse transmitted by the House Fly.**—*U.S. Dept. of Agriculture, Bureau of Animal Industry, Bulletin* 163. 1913. Apr. 3. 36 pp. With 41 text-figs.

More than fifty years ago CARTER discovered in Bombay that the house fly harboured larval nematode worms to which he gave the name *Filaria muscae.* Their life history remained a mystery and they were regarded of no significance from the public health point of view until Ransom published his preliminary note of the present paper. These recent investigations have proved that these larvae are a stage in the development of a parasite of the horse. The eggs passed in the faeces of the horse are taken up by the fly larvae and shortly before or after the transformation of the flies into the imaginal state the worms reach their final larval stage and reach their maturity when the flies they infest are swallowed by horses. In the flies the parasites are commonly found in the head, frequently in the proboscis, but occasionally also in the thorax and abdomen. The occurrence of these worms in a fly is positive proof that the fly was bred in horse manure; hence the frequency of their occurrence roughly indicates the extent to which horse manure is serving as a breeding place for flies in a neighbourhood.

R. T. L.

HALL (M. C.). **A Spurious Parasite reported as Trichinella.**—*Science.* 1913. Jan. 31. (new ser.) Vol. 37. No. 944. pp. 197-198.

In 1908 STACUBLI stated that it would probably be possible to diagnose trichinosis in suspected human cases by examining blood from a finger or ear instead of excising a portion of muscle. The method suggested consists in the centrifugation of the blood after the addition of three per cent. of acetic acid to dissolve the erythrocytes. The embryoes would be found in the deposit. Since then three cases have been discovered by this method. HALL considers that the records of HERRICK, JANEWAY (1909) and MERCUR and BARACH (1910) should be accepted. That of CROSS (1910) however is thought to be spurious, there are several indications "that CROSS was dealing with plant hairs or some similar foreign bodies simulating Trichinella; the only clinical symptoms given—facial oedema and a forty-four per cent. eosinophilia—leave the case open as far as the existence of a trichinosis is concerned."

R. T. L.

GENERAL AND UNCLASSED.

JOHNSON (W. B.). **Report on Entozoal Infection amongst Prisoners [in the Zungeru Gaol, Northern Nigeria].**—Received in Colonial Office, May 7, 1913. [Proof.]

Owing to the degree of debility and emaciation met with amongst prisoners in the Gaol at Zungeru, notwithstanding a quite generous and sufficiently varied diet, a microscopical examination was instituted of the stools of the convicts until the total

examined reached two hundred. Evidence of Entozoal infection was obtained in 53·5 per cent. Ankylostome infection was detected in 84 cases (42 per cent.), Taenia in 23 cases (11·5 per cent.), *Ascaris lumbricoides* in nine, *Trichocephalus trichiura* in nine, *Oesophagostomum* in eight, *Oxyuris vermicularis* in eight, *Schistosoma haematobium* in eight, and *Strongyloides stercoralis* in five.

The racial incidence of these infections is also tabulated in percentages [it would appear doubtful whether the results based upon so few as seven, and eleven, twelve and fourteen individuals of a tribe could be accepted as supporting the conclusions deduced therefrom].

The author believes that ankylostome infection is the most important cause of the debility so often seen amongst prisoners. He thinks it probable that in the natives' natural state some degree of immunity to the toxaemia is established, but when they are confined to gaol this immunity breaks down under the monotonous although efficient diet, the hard work, and possible mental depression, and the toxaemia becomes a very serious factor. He notes a marked improvement in the general condition after ankylostomes have been expelled in such cases.

In most of the cases under observation malnutrition was the only clinical indication of infection; in five however the disease terminated fatally. The degree of anaemia and emaciation depends not so much upon the number of worms present as upon the duration of infection and of other depressing influences and the presence of other entozoa. Of 35 cases 21 were due to *Ankylostoma duodenale* alone, in the remainder both *A. duodenale* and *Necator americanus* occurred. No instance of a pure infection with *N. americanus* came under observation.

Johnson's experience in treatment coincides with that of other workers. He finds the eucalyptus method inefficient and relies upon thymol, repeated in most cases after four days. In a series of weights before and after treatment for Ankylostomiasis some striking instances are given of the gain in weight, which averaged in 30 cases to no less than twelve and a half pounds. [It is curious however that] the same average gain in weight is shown during the same period by ten prisoners treated for infection with *Taenia saginata* alone.

Oesophagostomum in man has been recorded hitherto in two cases only, so that it is of some interest to find eight cases appearing in a systematic examination of 200 men. In only one case was the infection a simple one, in the remaining seven it was complicated with ankylostome infection. In the uncomplicated case no symptoms were noticeable.

R. T. L.

Bernard (P. Noël) & Koun (L.). **Parasitisme Intestinal en Annam.** —*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 343-346.

To supplement the published statistics of the Laboratories of Cochinchina and of Tonkin the authors have collated their observations at Hué in Central Annam during the years 1911 and 1912.

The stools of 300 patients under treatment for various, often external affections, and of 149 persons, including 50 mandarins, in perfect health, showed the following incidence of the various intestinal parasites:—

Ascaris	271	times, *i.e.*,	60·35	per cent.
Ankylostomes ...	170	,, ,,	37·86	,,
Trichocephalus ...	87	,, ,,	19·37	,,
Oxyuris	10	,, ,,	2·22	,,
Taenia	10	,, ,,	2·22	,,
Flukes	none.			

59·25 per cent. of the cases were infected with one species only. It was not possible to determine the species of ankylostome from an examination of the eggs in the stools. In the occasional post-mortems obtained the *Necator americanus* alone was found. Tapeworms are very common in Hué. Those microscopically examined were *Taenia saginata.* The eggs are only found exceptionally in the faeces for although the statistics given above show only ten positive findings, no less than 66 patients in 1910 and 56 in 1911 presented themselves for treatment. As one per cent. of the pigs killed at the abattoirs in Hué were found infected with *Taenia solium* and two per cent. with *Fasciolopsis rathouisi*, these parasites should not be exceedingly rare in man.

R. T. L.

MAXWELL (James L.). **Final Research Report for the Triennial Meeting [of the Medical Missionary Association of China].**—*China Med. Jl.* 1913. Mar. Vol. 27. No. 2. pp. 102-104.

In view of the enormous area covered by the membership of the Medical Missionary Association of China and its exceptional facilities for studying parasitic infections a few of the more enterprising members formed a Research Committee some years ago and appealed to the others to undertake certain investigations or to forward material and information. Very useful work was accomplished and it is with much regret that one reads in this the organising "Research Commissioner's Report" that the work is to be discontinued. Surely the exceedingly valuable observations which the Japanese have so frequently reported during the period will stimulate emulation in the workers in the same field in China.

The Commission has been able to contribute to helminthological knowledge at least three important matters (a) The universality of ankylostome infection in China; (b) The widespread occurrence of *Fasciolopsis buski* of slight intensity. In a comparatively small area near the mouth of the Yangtse River the infection is severe; (c) *Schistosoma japonicum* is confined in its distribution to the Yangtse Valley; (d) Dr. HOUGHTON believes that he has found eggs of *Fasciola hepatica* in the stools of several patients.

R. T. L.

SNELL (J. A.). **Report of Faeces Examination of 424 Cases in the Surgical Service of the Soochow Hospital. [Final Research Report.]**—*China Med. Jl.* 1913. Mar. Vol. 27. No. 2. p. 105.

Since October 1911 the author has made a routine examination of the faeces of patients under his charge as it was apparent that their condition due to the presence of intestinal parasites was often more serious than the particular surgical condition for which they had entered the hospital. The results are tabulated as under. The percentage of ankylostomes is believed to be higher than that shown in the table. *Fasciolopsis buski* is not very abundant in Soochow. Most of the cases come from Kunshan, near Shanghai, and Changshu, about thirty miles to the north of Soochow.

	Cases.	Percentage.
Nematoda:		
Ascaris lumbricoides	268	63·2
Trichocephalus trichiura ...	64	15·1
Ankylostoma duodenale	41	9·7
Oxyuris vermicularis	1	0·23
Trematoda:		
Fasciolopsis buski	11	2·6
Schistosoma japonicum	4	1·94
Unidentified ova	3	0·7

R. T. L.

WOOD (H. B.). **Intestinal Parasites in the South.**—*Jl. Amer. Med. Assoc.* 1912. Nov. 9. Vol. 59. No. 19. pp. 1707-1708.

The subjoined tables represent, as far as the records are available to the author, the results of the examinations of faeces made in the State laboratories in the Southern States of U.S.A. exclusive of Alabama, Louisiana, South Carolina, and Texas. The figures are those for 1911 and the first quarter of 1912 with some exceptions. The results of the Rockefeller Sanitary Commission are not included.

Table 1.—Summary of the intestinal parasites reported.

Total examinations reported	62,786
Total showing hookworm infestation ...	11,147
Percentage of hookworm infestation... ...	17·7
Percentage of infestation by other parasites	6·5

	No. of worms found.	Ratio to other parasites.
Necator americanus	11,147 ...	73·13
Ascaris lumbricoides	2,339 ...	15·34
Hymenolepis nana	1,004 ...	6·59
Trichocephalus dispar	551 ...	3·62
Strongylus [*Strongyloides*] *intestinalis*	119 ...	·79
Oxyuris vermicularis	72 ...	·47
Taenia saginata	10 ...	·06

Table 2.—Ratio of parasites found in various States.

—	Arkansas.	Florida.	Georgia.	Kentucky.	Mississippi.	North Carolina.	Tennessee.	Virginia.
Necator americanus	94·5	41·6	94·7	40·9	90·9	82·9	47·1	65·7
Ascaris lumbricoides	2·7	7·3	1·9	42·8	1·3	17·9	34·4	26·3
Hymenolepis nana	1·1	39·6	2·8	0·9	3·7	5·6	5·0	3·1
Trichocephalus dispar ...	0·3	10·6	0·1	15·4	—	3·1	8·6	3·2
Strongylus [*Strongyloides*] *intestinalis.*	0·7	0·8	—	—	15·0	1·1	0·2	—
Oxyuris vermicularis	0·3	1·0	0·2	—	0·4	—	2 6	0·9
Taenia saginata	—	—	—	—	0·4	0·03	1·1	—

[The extraordinary frequency of *Hymenolepis nana* is one of the most interesting results of the recent important statistical surveys made in the United States.]

R. T. L.

WARD (H. B.). **Means for the Accurate Determination of Human Intestinal Parasites.**—*Illinois Med. Jl.* 1912. Oct. 18 pp. With 46 text-figs.

This paper gives a brief and lucid account of the manner in which the chief helminthic infections of man may be accurately detected from a microscopical examination of the faeces. The peculiarities and sizes of the various eggs and embryos are described and beautifully portrayed.

R. T. L.

BEDSON (S. Philipps). **Lésions des Organes a Sécrétion interne dans l'Intoxication vermineuse.**—*Compt. Rend. Soc. Biol.* 1913. May 16. Vol. 74. No. 17. pp. 994-996.

The suprarenal capsule presents the most important lesions, of all the organs with internal secretion, in acute or chronic intoxication with verminous products. The thyroid reacts in a similar manner, more especially in subacute and chronic but only very slightly in acute intoxications. The hypophysis, pancreas, ovaries and testicles merely show insignificant lesions. The seriousness of the lesions of the suprarenal and thyroid is related rather to the number of injections and the duration of the intoxication than to the amount of toxin injected. The verminous product of ascarides and of some [unidentified] species of taenia produced identical lesions.

The organs of internal secretion react to verminous toxins in the same manner as to microbic toxins or to harmful chemicals.

R. T. L.

WEINBERG (M.) & SÉGUIN (P.). **Recherches sur l'Eosinophile et l'Eosinophilie (Deuxième Note). Explication de l'Abaissement Considérable du Taux de l'Eosinophilie après l'Opération du Kyste Hydatique.**—*Compt. Rend. Soc. Biol.* 1913. May 30. Vol. 74. No. 19. pp. 1096-1098.

It has been noted by several that the eosinophile index is lowered and sometimes to a considerable degree, within a few hours after operation for a hydatid cyst. The authors have experimented to prove that there is a causal relationship between the absorption of a large amount of hydatid fluid liberated in the course of surgical intervention and this diminution in the number of eosinophiles in the circulation.

A number of guineapigs showing a marked eosinophilia have been subcutaneously injected with six to ten cc. of hydatid fluid in such a way as to provoke as far as possible a local eosinophilia over a wide area. A notable diminution in the eosinophilia became apparent within an hour or two after the injection and this became most marked between six and eight hours after the commencement of the experiment. At this time the eosinophilic infiltration of the local lesion has attained its maximum. An intense infiltration of the subcutaneous and intramuscular connective tissue by polynuclear eosinophiles in the region of the injection was determined microscopically. Usually the eosinophiles begin to reappear in the blood on the day following the operation but occasionally, as has been noted in man, the small percentage of eosinophiles continues for two or three days. It has also been demonstrated experimentally that the abrupt disappearance of eosinophiles from the blood, which has been observed to take place in some cases of echinococcosis in man within one or two hours after operation, is explainable by a previous sensitising of the body by hydatid fluid. This increased sensibility in the reaction of the eosinophiles to the presence of toxic substance affords a new argument in favour of the view that these elements play a rôle in the absorption of certain toxic products.

R. T. L.

FILARIASIS.

LEIPER (R. T.). **Report of the Helminthologist, London School of Tropical Medicine, for the Half-year ending April 30th, 1913.**—*Report to the Advisory Committee of the Tropical Diseases Research Fund.* Received in Colonial Office, May 16, 1913. [Proof.]

Filaria loa.—The author gives the results of a search for the carrier of *Filaria loa*, by himself, on the West Coast of Africa, during the latter part of 1912 and the beginning of 1913.

No evidence of infection was obtained from a series of mosquitoes of various species fed upon a patient in whose blood very many *Filaria loa* embryos were present. With the same patient *Stomoxys calcitrans, Stomoxys nigra, Glossina palpalis, Cimex rotundatus, Pulex irritans, Tabanus par, T. socialis, T. fasciatus,*

T. secedens, also gave negative results. In *Haematopota cordigera* and *Hippocentrum trimaculatum* a slight degree of infection was obtained but development was unequal and slow.

In *Chrysops dimidiata* and *Chrysops silacea* a rapid and uniform development took place. No experiments were made with *Chrysops longicornis*, as this species was only obtained once at Forcados, and none of the four flies which were captured could be induced to bite. The experiments were brought to an abrupt close early in January owing to the lack of material.

Filaria volvulus.—At Lokoja, Northern Nigeria, Leiper noted no less than thirteen out of 168 prisoners suffering with *Filaria volvulus* tumours. In none of these were embryos found in the blood. Though large numbers of living embryos were injected subcutaneously and intraperitoneally into a monkey, none ever appeared in its blood. The tumours were usually multiple, each containing two or more nodules. The usual site was the crest of the ilium, but tumours were also noted over the sacrum and over the ribs. Specimens of *Stomoxys nigra* and *S. calcitrans* were fed upon the juice of tumours containing many living embryos. Dissections at later dates gave no evidence of the infection of the flies, although embryos were found in the stomach contents. No other biting flies were available for experiment.

Filaria medinensis.—At Calabar it was noted that the cases of guinea-worm in the hospital all came from the upper reaches of the Cross River; as a local infection dracontiasis was quite unknown. Difficulty was experienced in finding cyclops. Later, however, some cyclops developed from mud taken from collections of water around Calabar. The author thinks, therefore, that the cyclops had been kept under control in some manner and suggests that the innumerable small fish, belonging apparently to the genus Haplochilus, which abounded there, consumed them, as well as the eggs, larvae and pupae of mosquitoes.

A series of experiments showed that these fish were very hardy and adapted themselves readily to confinement in small tanks of water. Their use in wells containing cyclops is suggested. A possible explanation of the peculiar patchy distribution of guinea-worm in tropical countries may lie in the presence of the natural enemies of cyclops, the intermediate host.

G. C. Low.

CHOLERA.

ALESSANDRINI (Giulio) & SAMPIETRO (Gaetano). **Sulla Vitalità del Vibrione Colerigeno nel Latte e nelle Mosche.** [The Viability of Cholera in Milk and in Flies.]—*Ann. d'Igiene Sperimentale.* 1912. Vol. 22. (new ser.) No. 4. pp. 623-650.

In 6 experiments with different crude milks inoculated with cholera and kept at room temperature five showed no cholera after 2 days (two not even after one day), but one contained living vibrios up to 63 hours. Similar results were obtained with 4 milks inoculated with cholera stools, *i.e.* the organisms were recoverable up to 62 hours in one case, but in the others not after 2 days. If the samples were kept at 37°, the organisms disappeared in 6-8 hours. In all cases there was first a rapid multiplication, so that after 6-12 hours at room temperature the milk seemed to contain almost a pure culture of the cholera vibrios. Then the numbers fell off, at first relatively to other organisms but later absolutely, and eventually the cholera disappeared almost suddenly. This sudden disappearance is due to the increasing acidity of the milk, and it is to be noted that it is in comparatively fresh and therefore saleable milk that the vibrios are to be found in the greatest numbers. When the acidity reaches a degree corresponding to that of 9·5 or 10 per mille of lactic acid, they die out. In boiled or sterilised milk vibrios remain alive after inoculation up to 60 days when the culture is pure, and even when mixed cultures are added they remain longer than in raw milk.

Flies fed on material containing cholera vibrios in large numbers were found to carry the organisms on their surfaces and in their faeces for 24-36 hours. Similarly larvae could carry cholera on their surfaces, but only rarely were vibrios found in their faeces or intestine. Pupae did not carry the organisms; and flies which developed from larvae that had been kept in faeces full of cholera did not contain nor carry any of the vibrios. The author never recovered cholera from flies caught in conditions of actual practice, where there was reason to believe that contamination might have occurred; but he is prepared to admit that infection of milk may occur in this way.

J. Henderson Smith.

KRUMWIEDE, Junr. (Charles) & PRATT (Josephine S.). **Dahlia-Agar als Unterscheidungsmittel zwischen Cholera- und anderen Vibrionen.** [Dahlia-agar as a Differential Medium for Cholera.] — *Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Apr. 16. Vol. 68. No. 5-6. pp. 562-566.

SIGNORELLI pointed out that, if cholera vibrios be grown on agar to which some dahlia has been added, the developing colonies take up all the colouring matter and appear tinted against the uncoloured background; and he believed that this might prove of service in the differentiation of cholera from other vibrios. Krumwiede and Pratt, however, found it of no real value. The dye must be used very weak (1 in 50,000 or

even less) if it is not to inhibit the growth of the organisms, and no qualitative or quantitative distinction can be drawn between true cholera and other vibrios, either in resistance to the inhibiting action or intensity of staining. It was noticeable that the colonies were less deeply coloured in the strains which grew best.

J. H. S.

STOKES (W. Royal) & HACHTEL (Frank W.). **The Use of a Modified Hesse's Medium for isolating the Typhoid Bacillus and the Cholera Spirillum from Stools.**—*Centralb. f. Bakt.* 1. Abt., Orig. 1913. June 4. Vol. 69. No. 4. pp. 346-349.

The medium for cholera is made as follows. Of agar (dried for half an hour at 105° C.) 5·5 gm. are dissolved in 500 cc. of distilled water. To another 500 cc. are added 5 gm. Liebig's extract of beef, this is filtered and inoculated with *B. coli*; after 48 hours at 37° it is again filtered, and 10 gm. Witte's peptone added and also 8·5 gm. NaCl. This fluid is added to the 500 cc. agar solution, the whole boiled and filtered, 10 gm. starch added, the fluid made neutral to phenolphthalein, and then coloured with Kahlbaum's azolitmin. It is tubed, and autoclaved at 16 lbs. pressure for 20 minutes. In this medium intestinal spirilla give pink colonies; other colonies give blue colonies because they have no amylolytic ferment. The spirilla cannot be distinguished amongst themselves by this medium.

J. H. S.

BAUJEAN. **Etude comparée des Actions protéolytiques et hémolytiques de quelques Vibrions Cholériques.**—*Compt. Rend. Soc. Biol.* 1913. Apr. 25. Vol. 74. No. 14. pp. 799-800.

For estimating the proteolytic power the Chamberland filtrate of 2, 4, 6, or 8 day peptone-water cultures was added to 25 per cent. gelatine, and the time required for liquefaction determined. Ten strains were examined and in all the maximum power had been attained by the 2nd day, and in most had fallen again by the 4th day. The haemolytic power was tested against the corpuscles of rabbit, goat, guinea-pig, horse and man by inoculating tubes containing corpuscles with the vibrios. Some strains haemolysed none of the corpuscles, some laked all the kinds, and some laked certain kinds but not others. No connection was observed between the haemolytic and the proteolytic power—*e.g.* a strongly liquefying strain might have no haemolytic activity.

J. H. S.

BLOEDORN (W. A.). **Report of a Case of Cholera in the U.S.S. "Helena" and Notes on a Shanghai Epidemic.**—*U.S. Naval Med. Bull.* 1913. Apr. Vol. 7. No. 2. pp. 251-252.

A brief note of a case. In the foreign population of Shanghai (14,000) 23 cases of cholera or choleraic diarrhoea occurred during August and September with a mortality of 45 per cent. It is believed that flies played a part in spreading the disease.

J. H. S.

WHYTE (G. Duncan). **The Treatment of an Epidemic of Cholera by Rogers' Method. Based on a Study of 215 Cases which required the Intravenous Infusion of Saline.**—*China Med. Jl.* 1913. Mar. Vol. 27. No. 2. pp. 107-116.

The author refers only to cases in which the blood-pressure fell below 70 mm. mercury, *i.e.* to cases in which intravenous injection was practised. Of these there were 215 with 150 recoveries (70 per cent.); and he discusses chiefly the causes of death in the remaining 65 cases. The three main causes of death were collapse, hyperpyrexia and uraemia. The only reliable indication of impending collapse is a low or rapidly falling blood-pressure, and it can be guarded against only by repeated examination. In cases which develop quickly this must be done frequently, as collapse occurs more rapidly in such cases than in those which follow a slow course; and it is to be kept in mind that sometimes, where the difference between the systolic and diastolic pressures is great (as in aortic incompetence), the usual reading will give a wrong impression of the state of the patient. Vaso-constricting drugs were found of value, and the addition of glucose to the injection is recommended as a food where the patient is rejecting all food by the mouth. To correct hyperpyrexia ROGERS advises injections of reduced temperature, but this, according to Whyte, is effective only if the patient was febrile before the injection, and does not obviate the more frequent cases of fever due to the injection itself. The saline should be filtered, and in children should always be given subcutaneously. Hyperpyrexia accounted for all the deaths which occurred in children and for half the total of 65 deaths. Uraemia should be treated by raising the blood-pressure by saline injections and drugs, at the same time lowering the salt given as much as possible, and finally by cupping over the kidneys to reduce congestion. About 7 per cent. of the patients treated died from this cause.

J. H. S.

NAAME. **Sulla Cura del Colera con l'Adrenalin.** [On the Cure of Cholera by Adrenalin.]—*Gazz. d. Ospedali e. d. Cliniche.* 1913. Apr. 3. Vol. 34. No. 40. p. 415.

PIOVESANA. **Ancora della Cura del Colera.** [Further Remarks on the Cure of Cholera by Adrenalin.]—*Ibid.* Apr. 17. No. 46. pp. 481-482.

Piovesana claims priority in the use of adrenalin in the treatment of cholera as against Naame, who also claims it.

J. H. S.

SCHOPPER (K. J.). **Erfahrungen über die Cholera in Ostrumelien während des Balkankrieges 1912.** [Cholera in Eastern Rumelia during the Balkan War.] — *Wien. Klin. Wochenschr.* 1913. Mar. 6. Vol. 26. No. 10. pp. 366-370.

Four bacteriologists were sent from WEICHSELBAUM'S laboratory to Sofia, where they arrived on November 29, *i.e.*, about 14 days after cholera had broken out at the front in the Turkish troops.

In Sofia two cases had occurred before their arrival, but rigorous precautions kept further suspicious cases out of the city in an isolation hospital, where Schopper met with one other case. Numerous journeys were made to different quarters, from which reports of suspected cases were received, and a number of cholera cases recognised. Some of these were amongst the Turkish prisoners, but in every other instance the disease had been brought by transport-drivers. For the most part he found the sick herded together without precautions and under the most insanitary conditions, and it was with the greatest difficulty that even the most elementary measures of isolation could be carried out. The actual number of cholera cases, however, was not very large, and the disease died out almost suddenly towards the end of December. In all, 120 cases of intestinal disease were fully examined bacteriologically, of which 28 were cholera, 2 typhoid, 3 paratyphoid, 8 dysentery (7 being due to Flexner's bacillus). The cholera case mortality was 35·7 per cent.

J. H. S.

SEBASTIANI (Antonio). **Sui Vaccini Colerici.** [Cholera Vaccines.] —*Ann. d'Igiene Sperimentale.* 1912. Vol. 22. (new ser.) No. 4. pp. 569-598.

The author compares the effect produced in guineapigs and rabbits by different vaccines prepared from cholera vibrios. Of these he used one made by KOLLE's method, one according to WRIGHT, a nucleoproteid according to LUSTIG and GALEOTTI, an autolysed emulsion in distilled water and aggressins obtained from guineapigs. [We are unfortunately not given any means of comparing the dose employed of the two last with the others.] All these vaccines rendered guineapigs immune to five lethal doses of culture, but only the aggressins did so after one dose. The aggressins alone produced no marked rise in temperature, but they were not free from harmful results; and they produced the largest quantity of agglutinins in both guineapigs and rabbits. They also gave rise to the largest production of bacteriotropic substances, but all the others were effective in this respect. All the vaccines produced sera which fixed complement, notably the autolysed emulsion. A marked difference was observed in the production of bactericidal substance. Whereas both the Wright and Kolle vaccines produced sera which were strongly bactericidal, the serum obtained after inoculation with nucleoproteid or aggressin was scarcely bactericidal at all.

J. H. S.

CARAPELLE (E.). **Sul Colera del 1910-1911 in Sicilia e Specialmente in Palermo.** [The Cholera of 1910-1911 in Sicily and especially in Palermo.]—*Ann. d'Igiene Sperimentale.* 1912. Vol. 22. (new ser.) No. 3. pp. 451-495. With 14 figs. and 2 maps.

Cholera appeared in Sicily in 1910, imported into Palermo presumably from Naples, and after causing 504 cases or 0·13 per mille of the population, died out again in January 1911. In May

1911 it reappeared, the cause of the recrudescence being obscure, and this time it invaded nearly half the communes of Sicily and caused 7,834 cases or 2·08 per mille. In both years it was most severe in Palermo, whence it spread along the lines of communication through the island. In Palermo itself there were in this second epidemic 3,112 cases with 1,545 deaths. The author discusses the two epidemics on general epidemiological grounds, and concludes that while the 1910 epidemic was perhaps not certainly (at least in Palermo) a water-borne outbreak, that of 1911 was in the main carried by water. In the city the chief source of infection was the drinking water; in the borough-towns in the province, *e.g.*, in Brancaccio, the superficial irrigation water also spread the disease.

J. H. S.

Salimbeni (A.) & Orticoni. **Essais de Traitement des Porteurs Sains de Vibrion Cholérique par les Lavements de Sérum Spécifique.**—*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 306-308.

During an epidemic at Marseilles in 1911 34 persons in one Asylum were found to be carrying the vibrios without showing any definite symptoms of cholera, although some had slight choleraic diarrhoea. All these were treated as follows. Each received an evacuating enema and from the faeces so obtained cultures were made. Immediately after this an enema of 50 cc. of cholera serum in 200 cc. of salt solution was slowly injected, attempt being made to let the injection penetrate as far into the intestine as possible. In 9 out of the 34 the vibrios had disappeared at the time of the first injection; in 22 of the remainder they disappeared within 2 days, and in the 3 others in 3-6 days after the injection. None developed cholera. The numbers are small, but in another hospital several carriers continued to excrete the organisms for 15 days, and at least 2 developed cholera and died; and the authors consider that the treatment is worth a further trial. In none of their cases could they detect the presence of cholera antibodies in the serum of the patients treated.

J. H. S.

Emmerich (Rudolf) & Jusbaschian (A.). **Die Beeinträchtigung des Gift- *i.e.*, Nitritbildungsvermögens der Choleravibrionen durch freie salpetrige Säure.** [The Influence of Free Nitrous Acid on the Power of the Cholera-Vibrio to produce Poison, *i.e.*, Nitrites.]—*Arch. f. Hyg.* 1912. Vol. 76. pp. 12-76.

In accordance with the teaching of Koch it is generally held at the present time that the factors essential for an epidemic of cholera are present if we are given a case of the disease and some means of transmitting the organisms from that case to other persons. The transmission may be direct through contact with the excreted vibrios or indirect through contamination of water, milk, food, &c.; but whatever the method of transmission the organisms once transferred are as capable of producing the disease

in the second individual as they were in the first. This is denied by EMMERICH who has developed and modified the views of Max PETTENKOFER, and in the present paper he restates his position with some fresh experimental evidence on the production of nitrites by cholera-vibrios. Unlike PETTENKOFER, Emmerich admits that the transference of the excreted unmodified vibrios from man to man can give rise to choleraic disturbance. The disease so produced, however, is not virulent cholera: it is a cholerine of mild type, practically never fatal, and the true cholera epidemic with its 40-50 per cent. mortality is never due to man to man infection of this character. He bases this opinion on the numerous instances he has got together of cholera outbreaks where the infection must be due to excreted organisms, *e.g.*, ship-epidemics, infection of attendants on the sick, accidental or intentional infection by drinking cultures or stools (he has collected 53 such instances), in all of which the disease takes a very mild type with very low case-mortality, and he includes under this head town-epidemics occurring in wet seasons. Virulent cholera, he maintains, is caused only by organisms which have come from the soil, and only from soil which has been dry for lengthy periods, during which a gradual accumulation of suitable food has been collected on the surface by capillary upflow from the deeper layers of the ground. Excreted organisms, he asserts, have an enfeebled vitality and a greatly diminished power of nitrite-formation. When a case of the disease is imported into a district it can give rise only to mild forms unless the excreted organisms reach a suitable soil. When this happens the organisms regain their full powers, and from such foci the true epidemics are derived by repeated infection with these soil-bacteria, which are distributed by wind, the feet of passers-by, &c.

The severity of an infection with cholera depends on the capacity of the vibrio to produce nitrites and nitrous acid from the nitrates or other food, the cholera poison being simply nitrite or nitrous acid. These poisons occur regularly in fatal doses in the faeces and urine of cholera cases, and even after death the contents of the small intestine are acid in half the cases and contain nitrous acid; the anatomical changes and the clinical symptoms are due solely to their action, and can be reproduced by them in rabbits or guineapigs; cholera always begins after taking food in large quantities, and the only group of human beings immune to the disease are sucklings which take no nitrate in their food. The experiments recorded in this paper are directed to establishing the facts that excreted organisms have lost much of their power of producing nitrites, but regain it on passage through suitable soil; and he shows that exposure of these fully active organisms to nitrites in conditions designed to simulate those occurring in the body takes away again much of their power of producing nitrites.

J. H. S.

MISCELLANEOUS.

Bishopp (F. C.) & King (W. V.). **Additional Notes on the Biology of the Rocky Mountain Spotted-Fever Tick.**—*Jl. Econ. Entomol.* 1913. April. Vol. 6. No. 2. pp. 200-211.

The splendid work of the late H. T. Ricketts during 1906 and the three succeeding years, which showed that the tick *Dermacentor venustus* is the carrier of Rocky Mountain spotted fever, is first referred to. The fight against the disease, as that authority indicated, resolves itself into a campaign against the transmitting agent. The authors therefore go into the life cycle of the tick in detail.

As the adult tick is, with rare exceptions, the only stage which attacks man, the most feasible method of prophylaxis is to destroy it on the domestic animals. The determination of the period of activity of this stage is therefore of importance. The adults of *Dermacentor venustus* first appear after the first warm days of early spring (March eleventh and fifteenth in 1910 and 1911 in the Bitter Root Valley for example). Their date of disappearance in the autumn is much more variable, but after the first of August they do not appear anxious to feed and endeavour to escape from the host when applied. The months of their greatest abundance are April and May.

The mountain goat serves as a host for a considerable number of the adults, while the immature stages may also develop on this animal or on small mammals occurring on the mountains inhabitated by the goats. It is possible that the goat is a natural reservoir for the disease virus.

All stages of the tick—larvae, nymphs and adults—hibernate through the winter. Where this takes place has not been accurately determined, though it has been suggested that the different stages are probably carried into the winter quarters of ground squirrels and other animals.

The question of the time required for the *Dermacentor venustus* to complete its life cycle has been considerably discussed. At first it was thought that one generation developed annually, but more recent investigations have shown that this is not the normal cycle, two years being the usual time required. The adult, under natural conditions, does not become engorged the same season as it became transformed into that stage; therefore the completion of a cycle developing from overwintered nymphs is unlikely. Similarly the same habit prevents the completion of a generation from overwintered larvae. The principal hosts for the developing stages are the ground squirrel, *Citellus columbianus*, and the woodchuck, *Marmota flaviventer*, these rodents going into hibernation about the middle of August. In an experiment sixty-seven nymphs were placed on hosts on August 17 and 18 1910. These did not transform to adults till the following summer; hence they required more than one year for completing the cycle.

The authors believe then that the possibility of the completion of a cycle in one season is very remote in the Bitter Root Valley,

though in more southern localities there is more likelihood of some ticks, which hibernate as adults, being able to do so. At the rate of development noted by them in the Bitter Root Valley it is possible that the cycle may even take three years for completion.

In addition to spotted fever a considerable number of curious cases of paralysis, more or less complete and in some cases fatal, have been reported as being produced by *Dermacentor venustus*. [See papers below by TODD and EATON.]

Nine cases, in each of which a tick (in one case two ticks) was found attached to the hair below the occipital prominence, have been reported by TEMPLE from Oregon, while a similar case has been reported from Wyoming and one or two have been heard of in Montana. The affection, as reported, first manifests itself as a partial paralysis of the lower limbs, the paralysis advancing to the upper part of the body and arms, ultimately affecting speech, deglutition and respiration. The symptoms subside rapidly after removal of the tick. The point of attack seems to be an important factor in producing the symptoms. These observations, of course, by no means show conclusively that the condition has anything to do with the presence of the tick. Local, itching sores frequently follow at the point of attachment, especially if infection is introduced by scratching. Swelling of a limb and lameness have been known to persist for weeks following the bite of a spotted-fever tick which was left attached for some time.

G. C. Low.

TODD (John L.). i. **Does a Human Tick-Borne Disease Exist in British Columbia?**—*Canadian Med. Assoc. Jl.* 1912. August. Vol. 2. (new ser.) No. 8. p. 686.

ii. **Tick Bite in British Columbia.**—*Ibid.* December. No. 12. pp. 1118-9.

i. The author refers to Rocky Mountain spotted fever and states that the tick which transmits this disease in Montana exists also in some parts of British Columbia. In order to ascertain whether the disease occurs there Todd sent letters to a few doctors asking them whether they had ever met with cases of illness which had been ascribed to tick bites. Among the replies were letters from two doctors, who described several cases in which symptoms entirely different from those seen in Rocky Mountain spotted fever of Montana were ascribed to the bites of ticks. The history in all was practically identical, viz., paresis or paralysis which came on suddenly. On examination a tick was found attached to some part of the patient's body, in most instances near the nape of the neck. Some of the cases died; while in others after the tick was removed complete recovery followed in a few days.

The similarity of the history in the cases reported was striking and replies to a letter sent by Todd to different doctors revealed the fact that cases with similar histories have been seen in seven places in the southern and central parts of British Columbia.

On this evidence the author believes that it is possible that an undescribed disease may be caused by ticks in British Columbia.

ii. As a result of the letters sent out by the author forty replies were received. Some of the writers described cases in which infection of the wound caused by the tick's bite had been followed by a severe local inflammation, while others mentioned instances in which the bites of ticks had been followed by paresis or paralysis and sometimes by death. A description of these is given.

One case recorded by NELSON was that of a child who died suddenly with symptoms of acute ascending paralysis. After death a large tick was found at the nape of the neck. In 1901 a child, with the same symptoms, died after an illness of two days. A tick was found attached to the right temple. The knowledge of these two cases suggested the presence of a tick when a third child, previously very healthy, was seen, whose legs had been becoming weaker for two days. One was found at the nape of the neck; it was removed and in two days the child was quite well again. In April 1912, a girl of three had become paralysed. Paralysis of the legs was complete and the reflexes were gone; paresis of the arms was marked. Three ticks were removed from the nape of the neck and the child recovered completely.

A consideration of these different reports indicates that severe symptoms may follow the bites of ticks in British Columbia; children seem to be most affected. In them paresis and paralysis of the extremities, especially of the legs, are the most constant symptoms. Up till the time of Todd's investigation into the subject, it was not known that the bites of ticks in British Columbia could produce such symptoms.

G. C. L.

EATON (E. M.). **A Case of Tick-Bite followed by Wide-spread Transitory Muscular Paralysis.**—*Australasian Med. Gaz.* 1913. April 26. Vol. 33. No. 17. (No. 432.) pp. 391-394.

The case was that of a girl of four and a half years of age who had been in good health until the day prior to the author seeing her. On that day she would take no food and in the afternoon became restless and unsteady on her feet. When she was undressed and put to bed a tick was found with its head embedded on the back of the right shoulder. The parents cut the body off, leaving the mouth parts *in situ.* From the description given by the parents Eaton believes that the parasite was either *Ixodes ricinus* or *Ixodes holocyclus.*

On the second day the child vomited three or four times, and as she could not stand and appeared very ill, she was sent to the author, who found her in a state bordering on delirium, but sufficiently conscious to be annoyed by examination. The temperature was 101·4° F., the pulse rate 132, and the respirations 36 per minute. The muscles of the legs and thighs were quite flaccid and the lower limbs motionless, save for movement which could still be made out at the hip joints: the arm muscles could be moved, but with little force. The knee-jerks were absent.

Over the lower part of the right scapula was a pink patch about the size of a penny, in the centre of which was a purplish black spot, a quarter of an inch in diameter. In the middle of this was an aperture in which lay the head parts of the tick; these were scraped out and the cavity cleansed with pure carbolic.

On the third day there was diarrhoea but no abdominal pain and no vomiting. There was no sign of return of voluntary movement to the legs but the muscles were not so limp. On the next day, the fourth, the knee-jerks were obtainable but with difficulty; the child now could stand and even walk a few steps with support. The pupils were still inactive to light. Diarrhoea continued but was less severe.

On the fifth day the child could walk without support. The discolouration of the bite mark had become reduced and the cavity was healing up. This was the last time the author saw the patient but he was informed that progress to complete recovery within the next few days was uninterrupted.

He quotes other cases noted by CLELAND*; in one of these amblyopia was the most striking symptom, the pupillary movements being normal while only slight muscular weakness was present. In another (an infant of thirteen months), which proved fatal within two days, paralysis was present in the legs and respiratory muscles. In a third case faintness commenced within an hour of the attachment of the ticks. There was no paralysis but severe cardiac symptoms lasted over a week.

CLELAND also refers to a statement of BANCROFT's that the bites of Queensland ticks frequently kill dogs and cats. The symptoms in dogs are epileptiform attacks or prolonged convulsions while peripheral paralysis has also been seen during convalescence. One attack is said to confer immunity.

Eaton draws attention to the fact that the symptoms bear a very close resemblance to those of conine poisoning. As to the source of poison, he believes there are three possibilities:—(1) its pre-formation by the tick, (2) that it might be an infection conveyed by the tick, (3) that the poison might be elaborated locally after the bite.

[From the above description these cases of tick bite disease would seem to be not infrequent in Australia, and as TODD's cases from British Columbia, and BISHOPP and KING's from Montana would seem to be identical, the infection is evidently wide-spread, occurring in different parts of the world.]

G. C. L.

GRAY (Douglas G.). **Climatic Bubo.**—*China Med. Jl.* 1913. May. Vol. 27. No. 3. pp. 180-184.

The author states that the superficial oblique inguinal glands are the ones affected in climatic bubo. The glands of this group are disposed irregularly along Poupart's ligament and receive the lymphatic vessels from the integument of the scrotum, penis,

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* *Australasian Medical Gazette*, 1912. Sept. 21. Vol. 32, No. 12 (No. 401), pp. 295–296.

parietes of the abdomen, perineal and gluteal regions, and the mucous membrane of the urethra. All the cases, 27 in number, were seen in men in the prime of life, between the ages of 22 and 57 years, mainly the class who are prone to promiscuous intercourse. The author never met with it in the female sex, this observation agreeing with the reports of others who have studied the subject. The glands on removal were found to be massed together and enlarged, many of them showing more or less advanced areas of necrosis.

As regards treatment the author believes that medicines are of little or no use. Iodides, quinine, arseno-ferratose, etc., were all tried but with no noticeable effects. Similarly "606" intravenously, and a course of mixed staphylococcic vaccine were of no avail. He therefore advises early operation. Every gland that can be palpated must be removed and if done early enough this is easy as the glandular tissue is only slightly inflamed and the subcutaneous tissue not adherent. After extirpation, deep sutures reaching to the floor of the cavity are put in to approximate the walls. A drain may be left in for two or three days.

G. C. L.

TRIADO (A. J. J.). **Tropical or Climatic Buboes.**—*Australasian Med. Gaz.* 1913. May 10. Vol. 33. No. 19. (No. 434.) pp. 442-443.

In the last nine years the author has seen fifty cases of climatic bubo. He believes that sexual connection between aboriginal women and white men has to do with their production. [See also this *Bulletin*, Vol. 1, p. 474.] All the cases seen were in white males; natives both male and female seem to be exempt (two hundred and fifty cases examined). In twenty-seven the left inguinal glands were affected and in the remaining twenty-three the right. Thirty-seven had had gonorrhoea on some previous occasion of varying duration. Two had had gonorrhoea and syphilis, both in the past. The size of the buboes varied up to that of a hen's egg. After removal the different glands were seen to be distinct, all of them, especially the more superficial ones, showing softening in their centres. Periadenitis occurred, varying with the chronicity of the complaint. Pain was not a specially marked feature, but when the glands were very large they caused a sense of tightness in the groin and consequent difficulty in walking.

The diagnosis of these buboes from syphilitic and gonorrhoeal ones, Triado believes, offers no difficulties, their history and clinical course being quite different. Gonorrhoeal buboes show early tendency to suppuration and spontaneous bursting through the overlying skin if not early incised. In syphilis the bilateral distribution and the characteristic hardness of the bubo and other signs make the differential diagnosis easy. In all the author's cases the buboes were unilateral, and up to the time of writing none had developed a bubo on the opposite side.

The treatment adopted was complete removal in one mass of the whole of the affected glands, the earlier the better, as the

cavity left in the groin then is smaller. Occasionally complete removal in one mass is difficult, so in these cases curettage has to be adopted. After the removal the cavity is swabbed out with pure carbolic acid. There were no recurrences, the results of the operation being perfect.

Fifteen of the cases were examined bacteriologically, but no definite micro-organism was found. [Absence of bacteria or of any other parasites is what has been noted by various authors previously.]

G. C. L.

SAMBON (Louis W.). **Porocephaliasis in Man.**—*Jl. Trop. Med. & Hyg.* 1913. Apr. 1. Vol. 16. No. 7. pp. 97-100.

The first part of the paper completes the description of *Porocephalus clavatus* and is a continuation of a paper which appeared in the *Journal of Tropical Medicine and Hygiene,* December 16, 1912. (See this *Bulletin,* Vol. 1, pp. 403-405). Two other porocephali, *Porocephalus stilesi* and *Porocephalus wardi,* are now described. The former species was collected by NATTERER in 1821 at Ypanema (South America) from the lungs and body cavity of *Bothrops jararaca* (= *Lachesis lanceolatus*). The adult forms are found in the lungs of *Lachesis mutus* (Linn.), the Surucucu or Bush master, and of *Lachesis lanceolatus* (Lacep.), the rat-tailed pit-viper or Fer-de-lance. The nymphal form is unknown. The geographical distribution is Central and Tropical America.

Though more uniform in diameter throughout and with a more rounded terminal swelling, *Porocephalus stilesi* is similar in form of body and general appearance to *Porocephalus crotali* (*sensu stricto*) and *Porocephalus clavatus* Wyman, but differs from both in the number of annulations. These, which are over 80 in *Porocephalus crotali* and only about 40 in *Porocephalus clavatus,* number from 45 to 50 in *Porocephalus stilesi.*

Porocephalus wardi (Sambon, 1909) was found by NATTERER in the abdominal cavity of a *Podinema teguexin* (*Tupinambis teguexin*). Two males and one female were found 3 in. to 6 in. long. They are mentioned by DIESING and ascribed to the species *Porocephalus crotali* found by HUMBOLDT in *Crotalus terrificus.* Sambon, however, considers that this is a new species and has given it the above name. Its geographical distribution is South America.

G. C. L.

FRANÇA (C.). **Un Cas de Chappa?**—*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 351-355.

The case resembled very closely one of gout, but the author believes that he could identify it with an infection described by READ under the name of Chappa.* The patient acquired the infection in Mozambique.

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* *Jl. Trop. Med. & Hyg.* 1901. Oct. 15. Vol. 4. pp. 333-334.

Chappa, according to READ, is characterised by the following symptoms:—The illness commences by severe pains in the limbs with swelling of the articulations which give the sense of fluctuation. A little afterwards numerous nodules appear on different parts of the body; the skin which covers these nodules ulcerates without the formation of abscesses. In one case READ opened a joint on account of the fluctuation, but only found a fatty looking substance. The disease ends by attacking the bones and disorganising the articulations.

The differential diagnosis from gout is relatively easy, according to França, firstly by the analysis of the matter which infiltrates the tissues (protein) and secondly by radiography. Contrary to the tophus of gout (urates) the accumulations of protein are little permeable to the Röntgen rays and in the radiograph give a somewhat dark spot whilst urates give a clear spot.

G. C. L.

PHISALIX (Marie). **Propriétés Vaccinantes du Venin Muqueux de la Peau des Batraciens contre lui-même et contre le Venin de la Vipère Aspic.**—*Bull. Soc. Path. Exot.* 1913. Mar. Vol. 6. No. 3. pp. 190-195.

The analogy which exists between the physiological action of the secretion from the cutaneous mucous glands of batrachians and that of the serum of the eel and hedgehog, and of the venom of bees, spiders, and vipers has prompted the author to try some vaccination experiments with the former both against itself and against the venom of the viper. Frogs, guinea-pigs, and rabbits were used, the mucous venom of the terrestrial salamander (*Salamandra maculosa* Gray), the green frog (*Rana esculenta* Günth), and other batrachians being employed for the inoculation.

In the rabbit the most rapid method of immunisation is by direct inoculation into the veins, but as the action of the venom in certain cases is fulminating (foudroyante) (venom of *Alytes obstetricans, Discoglossus pictus* and *Rana esculenta*) it is necessary to attentuate the virus by appropriate heating. Finally the rabbit develops a certain degree of immunity against viperine poison. The practical value of the method is that it may be applied to young dogs, which are often killed by viper bites in their first season of hunting.

G. C. L.

BAUJEAN (R.). **Note sur le Venin de *Bitis arietans* ou Vipère heurtante.**—*Bull. Soc. Path. Exot.* 1913. Jan. Vol. 6. No. 1. pp. 50-54.

Observations were made on a small quantity of dried puff adder venom sent by FITZSIMONS from Port Elizabeth, Natal to CALMETTE in Lille. The toxic, proteolytic, haemolytic and coagulating properties of the venom were tested. The chief characteristics of the poison were its intense proteolytic action and the

haemorrhagic lesions which it provoked in animals. It also showed the following peculiarities—(1) An absence of all haemolytic action. (2) A strong haemorrhagic tendency not destroyed by a temperature of a 100° C. maintained for half an hour. (3) An absence of coagulation of the blood on intravenous injection, and of normal plasma and blood from the head of the leech in vitro, although on the contrary it coagulated citrated and oxalated blood.

G. C. L.

WILLETS (David G.). **General Conditions affecting the Public Health and Diseases prevalent in the Batanes Islands, P.I.**—*Philippine Jl. Sci.* Sec. B. Trop. Med. 1913. Feb. Vol. 8. No. 1. pp. 49-57.

The author's report is based upon observations made in the Batanes Islands, a group lying between Formosa and the Philippines, chiefly in the town of Santo Domingo de Basco, Batan Island, from April 2nd to May 7th, 1912.

A disease resembling malaria in some respects was met with. It was characterised not only by fever but also by chills, vomiting, and sweating. However, in the examination of a number of persons from Itbayat, only one enlarged spleen was met with, and the blood of this patient, as well as that of a number of others from the same place and a few from Batan, who claimed to have had the fever within the past two years, was examined for malarial parasites with negative results. Further investigation is evidently necessary to prove what this fever is.

No case was seen suggesting elephantiasis, and a search for filariae in the blood of 191 adults taken at night resulted negatively.

Acute cases of dysentery were not met with and only two chronic ones, neither of these showing entamoebae. In stools five infections of protozoan parasites were found, one with monads, two with entamoebae and two with *Balantidium coli*.

Evidence of helminthic infection was readily found. 400 persons were examined with the following results. Single infections were present in 46 per cent., double in 42·5 per cent., triple in 11·5 per cent., *Ascaris* in 92·8 per cent., *Trichiuris* in 46·7 per cent., hookworms in 24·5 per cent., *Oxyuris* in one per cent., and *Strongyloides* in 0·5 per cent. No cestode infections occurred in the 400 examined, but one infection with *Taenia saginata* was found at Sabtang. Of other tropical diseases cholera was present in 1902, dengue fever occurs from time to time and beriberi is apparently absent. No cases of yaws were seen.

Since 1906 several lepers have been taken from the Islands; some of these were natives, others fugitives from northern Luzon.

Venereal diseases are apparently rare.

G. C. L.

Photomicrographs of Spirochaetae, Entamebae, Plasmodia, Trypanosomes, Leishmania, Negri Bodies, and Parasitic Helminths.—*U.S. War Dept. Office of the Surgeon General. Bulletin* No. 1. 1913. Jan. 46 pp. With 17 plates. (Washington: Govt. Printing Office.)

This Bulletin contains a very interesting series of microphotographs of parasites from different tropical diseases. The negatives have been made mainly from specimens in the Army Medical Museum and though the collection is in no sense a complete one, yet it is believed that the photographs will be of considerable help to medical officers in the study and diagnosis of the different parasites. The photographs are clear and perfectly executed. An explanatory text accompanies them, the methods used in the preparation of these specimens being given and ample directions for the preparation of similar specimens.

The greater number of the negatives are the work of the late Dr. W. M. Gray of the Army Medical Museum, while the text is the work of Capt. C. F. Craig, Capt. H. J. Nichols, and Major F. F. Russell.

G. C. L.

Hummel (E. M.). **The Prevalence of Asthenic Disorders of the Nervous System in Warm Climates.**—*Interstate Med. Jl.* 1913. June. Vol. 20. No. 6. pp. 522-525.

The author states that during his practice of neurology in a sub-tropical climate for a number of years he has been impressed with the great frequency of those types of neuroses which are regarded as founded upon asthenic states of the nervous system, and which we usually designate as neurasthenic. The predominence of this type of neurosis is out of keeping with what is observed in the larger nerve clinics of the United States and of Europe, which are all situated in colder climates. So prevalent are such neuroses in the Southern section of the States that the author believes climatic conditions must be responsible for their development. The condition varies from a simple lack of energy to a pronounced neurasthenia and in most instances no definite physical cause can be blamed for it. People of blond complexion suffer most frequently.

Woodruff of the United States Army, who has made extensive observations on the subject, is specially convinced of this. Contrary to accustomed belief it is not so much the high temperature and humid condition of the atmosphere which depresses and enervates those exposed to tropical climates as the intense light of the sun that acts in a deleterious way. According to the author the best proof of this is the fact that all aboriginal people in tropical or sub-tropical climates are highly pigmented and he states that there are indications that all the aboriginal races of the earth were at least brunette in type.

Either directly or indirectly as a result of the excessive action of light rays on the nervous system, the digestive functions become disordered or reduced in activity. This has led to the common practice of the excessive use of peppery condiments and alcoholic appetizers, equally harmful practices. The excessive consumption of food should also be avoided. The best guide to the quantity required is the appetite and not irritating condiments and alcoholic drinks. Alcohol disturbs not only the liver and stomach but the nervous system and it is a well known fact that alcoholics are especially prone to develop sunstroke.

G. C. L.

Le Roy des Barres. **Rapport sur la Natalité, la Morbidité et la Mortalité à Hanoi en 1912.** — *Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Vol. 4. No. 5. pp. 248-251.

This interesting report states some of the chief causes of death met with in Hanoi in 1912. During the year out of 1,833 deaths 71 were in Europeans. Malaria was responsible for 185 deaths, ten of these being in Europeans. Relapsing fever gave 46 deaths out of 437 cases. This high percentage of death, it is pointed out, is due to the fact that "606" was not used in the treatment or only in the last stages. Tuberculosis was responsible for a large death rate, 152 deaths; 136 of the cases were of the pulmonary type. The author states that this disease is very frequent amongst the Annamites, and that it will be necessary to take measures to prevent its diffusion.

One case of plague and none of cholera were observed during the year.

G. C. L.

Wurtz (M.). **Moustiques et Fosses d'Aisances.**—*Rev. de Méd. et d'Hyg. Tropicales.* 1913. Vol. 10. No. 1. pp. 13-15.

The author was called upon to investigate an invasion of mosquitoes in a hospital (*l'Hospice de Vieillards des Ménages*) of which he was the physician. It was found that the insects were breeding in two cesspits situated in the grounds of the building. A chemical examination of the sewage gave the following:—

Reaction to litmus	alkaline
Phenol-phthalein reaction	alkaline
Amount of alkalinity	0·44 gm. per litre (expressed in NaOH)
Density	1001
Chlorides, about	0·55 gm. per litre
Nitrogenous substances, total nitrogen	0·39 gm. per litre
Albuminoid substances	traces
Ammonia	0·37 gm. per litre
Carbonates	traces
Organic substances.—Reducing action on Fehling's solution	almost none
Reducing action on acid permanganate	perceptible

The application of petroleum to the cesspits was immediately followed by a cessation of the insects and by systematical oiling they were easily kept under.

G. C. L.

FERREYROLLES (Paul). **La Destruction Pratique des Moustiques sous les Tropiques. (L'Organisation sanitaire de Panama. Les Résultats acquis.)**—*Rev. de Méd. et d'Hyg. Tropicales.* 1913. Vol. 10. No. 1. pp. 16-23.

An account is given of sanitary organisation in Panama and the results obtained from the measures adopted to destroy mosquitoes. Attention is drawn to the value of small fish as destroyers of larvae, but it is pointed out that these are only useful where larvicide cannot be employed.

[The methods adopted in Panama are now so well known that they need not be given in detail here. The part played by small fish in the destruction of mosquitoes has probably been much magnified.]

G. C. L.

KNAB (Frederick). **Spider's Web and Malaria.**—*Jl. Trop. Med. & Hyg.* 1913. May 1. Vol. 16. No. 9. pp. 133-134.

The author, replying to a paper by O'CONNELL who pleads for the web-making spiders as effective destroyers of malaria-transmitting mosquitoes, points out that records of the supposed efficiency of spiders as mosquito destroyers are not sometimes based upon actual observations. SAMBON and LOW have shown that the *Anopheles maculipennis* in Italy is often found resting on cobwebs in houses, stables and hen-houses in great numbers, and now Knab demonstrates that *A. quadrimaculatus*, the North American representative of the European *A. maculipennis*, also does the same. From these observations it is clear that web-making spiders in Italy and North America do not act as effective destroyers of malaria bearing mosquitoes. It is of course, as the authors says, possible that in other parts of the world other species of Anopheles may be caught in spiders' webs but, if so, this has not been demonstrated. The author's conclusions are that "the generalizations, unsupported by sufficient and accurate data, with which economic mosquito literature now abounds, are likely to prove valueless and indeed misleading."

G. C. L.

JACKSON (Thos.). **Cocoanut Oil as an Insecticide.**—*Indian Med. Gaz.* 1913. May. Vol. 48. No. 5. p. 203.

Jackson recommends cocoanut oil as an insecticide for bugs. He states that all that is necessary is to smear a little of the oil over the place where these insects are found, or where there are cracks and crevices the oil may be dropped into them. By the

use of this medium any barrack or hospital ward or article of furniture or bedding can, in a short time, be freed of bugs and with a minimum amount of disturbance or upheaval. The author refers to RUCKER's work on the destruction of bugs by fumigation (this *Bulletin*, Vol. I., pp. 533-534) but queries whether the ova could be destroyed by the different gases used. Cocoanut oil will, however, Jackson says, destroy the ova as well as the adult insect.

G. C. L.

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The TITLE PAGE and INDEX of Volume I, which closed with Bulletin No. 12, are being prepared and will be issued in due course.